City Council
Regular Meeting
AGENDA

(to be held both at the physical and virtual locations below)

Civic Center Council Chamber ♦ 300 Seminary Avenue ♦ Ukiah, CA 95482

To participate or view the virtual meeting, go to the following link: https://us06web.zoom.us/j/83015773456

Or you can call in using your telephone only:

- **Call (toll free) 1-888-788-0099**
- **Enter the Access Code: 830 1577 3456**
- **To Raise Hand enter *9**
- **To Speak after being recognized: enter *6 to unmute yourself**

Alternatively, you may view the meeting (without participating) by clicking on the name of the meeting at www.cityofukiah.com/meetings.

September 3, 2025 - 5:15 PM

1. ROLL CALL

2. PLEDGE OF ALLEGIANCE

3. AB 2449 NOTIFICATIONS AND CONSIDERATIONS

4. PROCLAMATIONS/INTRODUCTIONS/PRESENTATIONS

4.a. Community Services Summer Wrap Up.
Recommended Action: Receive Presentation.

4.b. Proclamation of the Ukiah City Council Recognizing September as Hispanic Heritage Month in the City of Ukiah.
Recommended Action: Issue a Proclamation of the Ukiah City Council recognizing September as Hispanic Heritage Month in the City of Ukiah.
Attachments:
1. Hispanic Heritage Month Proclamation

4.c. Presentation from Greater Ukiah Business and Tourism Alliance Regarding Activities and Events.
Recommended Action: Receive presentation from Katrina Kessen, Executive Director of the Greater Ukiah Business and Tourism Alliance.

5. PETITIONS AND COMMUNICATIONS

6. APPROVAL OF MINUTES

6.a. Approval of the Minutes for the August 20, 2025, Special Meeting.

Recommended Action: Approve the Minutes for the August 20, 2025, Special Meeting.

Attachments:
1. 2025-08-20 CC Draft Minutes - Special Meeting

6.b. Approval of the Minutes for the August 20, 2025, Regular Meeting.

Recommended Action: Approve the Minutes for the August 20, 2025, Regular Meeting.

Attachments:
1. 2025-08-20 CC Draft Minutes

7. RIGHT TO APPEAL DECISION

Persons who are dissatisfied with a decision of the City Council may have the right to a review of that decision by a court. The City has adopted Section 1094.6 of the California Code of Civil Procedure, which generally limits to ninety days (90) the time within which the decision of the City Boards and Agencies may be judicially challenged.

8. CONSENT CALENDAR

The following items listed are considered routine and will be enacted by a single motion and roll call vote by the City Council. Items may be removed from the Consent Calendar upon request of a Councilmember or a citizen in which event the item will be considered at the completion of all other items on the agenda. The motion by the City Council on the Consent Calendar will approve and make findings in accordance with Administrative Staff and/or Planning Commission recommendations.

8.a. Report of Disbursements for the Month of July 2025.

Recommended Action: Approve the report of disbursements for the month of July 2025.

Attachments:
1. July 2025 Summary of Disbursements
2. Account Codes for Reference
3. Object Codes for Reference
4. July 2025 Disbursement Detail

8.b. Adoption of an Ordinance to Establish an Administrative Use Permit Process, Reorganize Performance Standards, and Clarify Related Zoning and Animal Keeping Provisions in the Ukiah City Code.

Recommended Action: Adopt an ordinance amending the Ukiah City Code to establish an Administrative Use Permit process, reorganize and consolidate performance standards, and clarify related zoning and animal keeping provisions in the Ukiah City Code.

Attachments:
1. Draft AUP Ordinance
2. Planning Commission Resolution

8.c. Adoption of an Ordinance Amending the City's Accessory Dwelling Unit and Junior Accessory Dwelling Unit Regulations to Ensure Compliance with State Law and the Findings of the California Department of Housing & Community Development.

Recommended Action: Adopt an ordinance amending the City's Accessory Dwelling Unit and Junior Accessory Dwelling Unit Regulations to Ensure Compliance with State Law and the Findings of the California Department of Housing & Community Development.

Attachments:
1. HCD ADU Findings Letter - City of Ukiah (04.24.2025)
2. Response to HCD Findings
3. PC Resolution #2025-02
4. Ordinance

8.d. Adoption of a Resolution Authorizing the City Manager to Execute Agreements with the California Department of Transportation for the City of Ukiah East Perkins Multimodal Transportation Plan; and Approve Corresponding Budget Amendments Once the Agreements have been Executed.

Recommended Action: Adopt a resolution authorizing the City Manager to execute a project-related agreement(s) with the California Department of Transportation for the City of Ukiah East Perkins Multimodal Transportation Plan, and approve the related budget amendments, to take effect upon execution of the agreement(s).

Attachments:

1. Resolution E Perkins St Multimodal Transportation Plan
2. FY2425 SC Grant Application_East Perkin Multimodal Trans Plan
3. Sustainable Communities FY 202425 Application Guidelines

8.e. Approve the Notice of Completion for the Thickening and Dewatering Improvements Project, Specification No. 23-02, and Direct the City Clerk to File the Notice of Completion with the County Recorder.

Recommended Action: Approve the Notice of Completion for the Thickening and Dewatering Improvements Project, Specification No. 23-02, and direct the City Clerk to file the Notice of Completion with the County Recorder.

Attachments:

1. WWTP Thickening and Dewatering Improvements Plans & Specs
2. Spec 23-02 Thickening and Dewatering Improvements Project Change Orders
3. Notice-of-Completion

9. AUDIENCE COMMENTS ON NON-AGENDA ITEMS

The City Council welcomes input from the audience. If there is a matter of business on the agenda that you are interested in, you may address the Council when this matter is considered. If you wish to speak on a matter that is not on this agenda that is within the subject matter jurisdiction of the City Council, you may do so at this time. In order for everyone to be heard, please limit your comments to three (3) minutes per person and not more than ten (10) minutes per subject. The Brown Act regulations do not allow action to be taken on audience comments in which the subject is not listed on the agenda.

10. COUNCIL REPORTS

11. CITY MANAGER/CITY CLERK REPORTS

12. PUBLIC HEARINGS (5:30 PM)

12.a. Consideration and Possible Adoption of a Resolution Amending the Fee Schedule of the Planning and Building Divisions of the Community Development Department to Eliminate Fee Discounts for Select Uses and Establish an Administrative Use Permit Fee.

Recommended Action: Adopt Resolution amending the Fee Schedule for the Planning and Building Divisions of the Community Development Department.

Attachments:

1. Reso 2024-05 - Fees for Planning and Building Permits and Services
2. Fee Reductions-Discounts Table
3. 2-21-24 and 5-15-24 ASRs
4. Planning Division Fee Schedule Discounts Report May 2024
5. Planning Services Fees Comparison- City of Ukiah.County of Mendocino
6. Draft Resolution- Planning and Building Services Fee Schedule

13. UNFINISHED BUSINESS

13.a. Consideration of the 2025 Sewer System Management Plan Update.

Recommended Action: Approve Sewer System Management Plan 2025 Update.

Attachments:
1. Ukiah SSMP w Appendices (08.20.2025)

13.b. Possible Adoption of Urgency Ordinance Adopting FEMA's Model Floodplain Management Ordinance, Flood Insurance Study, and Flood Insurance Rate Maps.

Recommended Action: Adopt the Urgency Ordinance Adopting FEMA's Model Floodplain Management Ordinance, Flood Insurance Study, and Flood Insurance Rate Maps

Attachments:
1. Floodplain Management Urgency Ordinance
2. 13b Floodplain Management Ordinance FEMA - Updated

13.c. Adopt Resolution Affirming that the Proclamation of a Local Emergency Due to Conditions Caused by Atmospheric Rivers Causing Damage to Public Infrastructure Remains in Effect.

Recommended Action: Adopt a resolution affirming that the declaration of a local emergency remains in effect.

Attachments:
1. Resolution 2025-07 - Proclamation of Local Emergency
2. Resolution 2025-37 - Ratification of Proclamation of Local Emergency
3. Continuing Atmospheric River State of Emergency Resolution

14. NEW BUSINESS

14.a. Resolve Bid Protests Received for Specification No. 25-04 for the Remodel of 501 South State Street, and Approve Final Award Recommendation.

Recommended Action: Consider the bid protest submitted by Cupples and Sons Construction Inc., reject the protest, accept the counterprotest from DMR Builders, waive the irregularity in DMR Builder's bid, and award the contract to the lowest responsible bidder, DMR Builders, in the amount of $3,487,850 for Specification No. 25-04, Remodel of 501 South State Street.

Attachments:
1. Spec 25-04 Remodel of 501 South State Street
2. Bid Tabulation Spec 25-04 Remodel of 501 South State Street
3. Bid Protest- Remodel BofA
4. Bid Protest Response BofA
5. Cortlandt Roofing Ukiah Bank of America Proposal -
6. 14a Correspondence Received - Myles Fisette

14.b. Receive Updates on City Council Committee and Ad Hoc Assignments, and, if Necessary, Consider Modifications to Assignments and/or the Creation/Elimination of Ad Hoc(s).

Recommended Action: Receive report(s). The Council will consider modifications to committee and ad hoc assignments along with the creation/elimination ad hoc(s).

Attachments:
1. 2025 City Council Special Assignments and Ad Hocs

15. CLOSED SESSION - CLOSED SESSION MAY BE HELD AT ANY TIME DURING THE MEETING

15.a. **Conference with Legal Counsel – Anticipated Litigation**
(Government Code Section 54956.9(d)(4))
Initiation of litigation (1 case)

15.b. **Conference with Legal Counsel – Existing Litigation**
(Government Code Section 54956.9(d)(1))
Name of case: Vichy Springs Resort v. City of Ukiah, Et Al; Case No. SCUK-CVPT-2018-70200

15.c. **Conference with Legal Counsel – Existing Litigation**
(Government Code Section 54956.9(d)(1))
Name of case: Vichy Springs Resort, Inc v. City of Ukiah, et al.; Case No. 24-cv-07106-JSC

15.d. **Conference with Real Property Negotiators**
(Cal. Gov't Code Section 54956.8)
Property: APN Nos: 184-080-37;184-080-36; 184-090-01; 184-090-07; 184-090-06; 184-100-04
Negotiator: Sage Sangiacomo, City Manager
Negotiating Parties: Henry's Original
Under Negotiation: Price & Terms of Payment

15.e. **Conference with Real Property Negotiators**
(Cal. Gov't Code Section 54956.8)
Property: APN Nos: 170-030-05; 170-030-03; 170-010-05; 170-020-07; 170-020-11; 170-040-03; 170-020-08
Negotiator: Sage Sangiacomo, City Manager
Negotiating Parties: Project Ovis LLC
Under Negotiation: Price & Terms of Payment

15.f. **Conference with Labor Negotiator (54957.6)**
Agency Designated Representative: Sage Sangiacomo, City Manager
Employee Organizations: All bargaining units
Unrepresented Employee: Police Chief

16. ADJOURNMENT

Please be advised that the City needs to be notified 72 hours in advance of a meeting if any specific accommodations or interpreter services are needed in order for you to attend. The City complies with ADA requirements and will attempt to reasonably accommodate individuals with disabilities upon request. Materials related to an item on this Agenda submitted to the City Council after distribution of the agenda packet are available for public inspection at the front counter at the Ukiah Civic Center, 300 Seminary Avenue, Ukiah, CA 95482, during normal business hours, Monday through Friday, 8:00 am to 5:00 pm. Any handouts or presentation materials from the public must be submitted to the clerk 48 hours in advance of the meeting; for handouts, please include 10 copies.

I hereby certify under penalty of perjury under the laws of the State of California that the foregoing agenda was posted on the bulletin board at the main entrance of the City of Ukiah City Hall, located at 300 Seminary Avenue, Ukiah, California, not less than 72 hours prior to the meeting set forth on this agenda.

Kristine Lawler, CMC-City Clerk
Dated: 8/29/25

Agenda Item No: 4.a.

MEETING DATE/TIME: 9/3/2025

ITEM NO: 2025-959

City of Ukiah

AGENDA SUMMARY REPORT

SUBJECT: Community Services Summer Wrap Up.

DEPARTMENT: Community Services

PREPARED BY: Jake Burgess, Community Services Supervisor, Marianne Aranda, Senior Recreation Coordinator

PRESENTER: Marianne Aranda, Senior Recreation Coordinator; Daniel Spence, Recreation Supervisor

ATTACHMENTS:

1. Community Services Summer Wrap-up 2025

Summary: Community Services Staff will present on summer events and programs.

Background: The Community Services Department operates a wide range of special events and programs during the summer, including Summer Safari, Sundays in the Park, Aquatics, Touch-a-Truck, Kids Triathlon, Community Yard Sale, All-American Picnic in the Park, Summer Fridays, and Youth and Adult Sports.

Discussion: Community Services Staff will provide a presentation summarizing summer events and programs.

Recommended Action: Receive Presentation.

BUDGET AMENDMENT REQUIRED: n/a

CURRENT BUDGET AMOUNT: n/a

PROPOSED BUDGET AMOUNT: n/a

FINANCING SOURCE: n/a

REVENUE: Yes / No x GRANT: No

PREVIOUS CONTRACT/PURCHASE ORDER NO.: n/a

COORDINATED WITH: n/a

STRATEGIC PLAN (SP): n/a

CLIMATE INITIATIVES (CI): n/a

GENERAL PLAN ELEMENTS (GP): n/a

Approved:
Sage Sangiacomo, City Manager

COMMUNITY SERVICES

GRACE HUDSON MUSEUM & Sun House

City of Ukiah

RECREATION

SUMMER WRAP-UP 2025

GRACE HUDSON MUSEUM

Opening Reception for
Art of Wonder
Friday, May 23

Dogbane Cordage Workshop
with Tektekh Gabaldon
Saturday, June 14

GRACE HUDSON MUSEUM

Assemblage Play Day
Saturday, June 28

Painting Icons
Saturday, August 23

SUMMER SCHOOL

733 Students

PART-TIME STAFF

156 Summer Safari &
Summer School Staff

45 Aquatics Staff

SUMMER SAFARI DAY CAMP

171 Campers

AQUATICS

1433 Swim Lessons

Added Designated Adult Swim Lessons

ADULT SPORTS

Adult Volleyball

5 teams

Over 50

Participants

Adult Basketball Summer League

8 teams with over 80

Participants

Adult Softball

48 Teams and over 550 Participants

Bud Light Summer Shoot Out

– 12 total teams with teams coming from

all over Mendocino, Lake, & Sonoma Counties

YOUTH SPORTS

<u>Youth Volleyball Camps</u>

Over 150 Participants

<u>Junior Giants</u>

Over 150 Participants

Over 30 Adult Volunteers

<u>Youth Basketball Camps</u>

Over 120 Participants

KIDS TRIATHLON

80 Participants
Ages 2 - 17

Partnership:

UVAC

NORTH COAST Mendocino • Lake • California STRIDERS

ALL AMERICAN PICNIC IN THE PARK

680 Hot Dogs Served

Partnership:

COMMUNITY YARD SALE

50+ vendors per date

BARK IN THE PARK

inaugural event

SUMMER FRIDAYS

3 Movies at the Pool

600+ attendance opening movie

SUMMER FRIDAYS

Touch-a-truck

30 Vehicles

PARTNERSHIP:

Shop Local.
PEAR TREE CENTER
OWNED & MANAGED BY
CIRE

SUMMER FRIDAYS

PARTNERSHIP:

ROBERT FERGUSON OBSERVATORY

SUNDAYS IN THE PARK

5700 attendees first concert

Agenda Item No: 4.b.

MEETING DATE/TIME: 9/3/2025

ITEM NO: 2025-974

City of Ukiah

AGENDA SUMMARY REPORT

SUBJECT: Proclamation of the Ukiah City Council Recognizing September as Hispanic Heritage Month in the City of Ukiah.

DEPARTMENT: City Manager / Admin

PREPARED BY: Maria Ceja, Administrative Analyst

PRESENTER: Douglas F. Crane, Mayor or other Councilmember

ATTACHMENTS:

1. Hispanic Heritage Month Proclamation

Summary: The Ukiah City Council will issue a proclamation recognizing September as Hispanic Heritage Month in the City of Ukiah.

Background:

National Hispanic Heritage Month is celebrated annually from September 15th through October 15th to honor the histories, cultures, and lasting contributions of Hispanic and Latino Americans. The City of Ukiah is proud to join in this observance, recognizing the local Hispanic/Latino community whose influence is woven into the city's cultural, social, and economic fabric.

Hispanic and Latino residents, including City employees, elected officials, educators, business leaders, community organizations, and grassroots advocates, have enriched Ukiah by fostering cultural understanding, advancing education, supporting civic life, and strengthening community connections. Their contributions span across the arts, public service, business, and beyond, reflecting a legacy of resilience and achievement that continues to shape our community. By recognizing Hispanic Heritage Month, the City of Ukiah reaffirms its commitment to honoring diversity and promoting an inclusive community for all residents.

Discussion: At the September 3, 2025, Regular Meeting, the City Council will issue a Proclamation (Attachment 1) recognizing September as Hispanic Heritage Month in the City of Ukiah. The proclamation highlights the invaluable contributions of the Hispanic and Latino communities and invites residents to participate in celebrations and activities that honor Hispanic culture, history, and traditions.

Recommended Action: Issue a Proclamation of the Ukiah City Council recognizing September as Hispanic Heritage Month in the City of Ukiah.

BUDGET AMENDMENT REQUIRED: N/A

CURRENT BUDGET AMOUNT: N/A

PROPOSED BUDGET AMOUNT: N/A

FINANCING SOURCE: N/A

REVENUE: Yes / No GRANT: Yes / No N/A

PREVIOUS CONTRACT/PURCHASE ORDER NO.: N/A

COORDINATED WITH: Diversity and Equity Committee

STRATEGIC PLAN (SP): **SP 5C** - Create, sustain, and advance a diverse and inclusive workplace and workforce that reflects, values, and celebrates the diverse community we serve.

CLIMATE INITIATIVES (CI): N/A

GENERAL PLAN ELEMENTS (GP): N/A

Approved:
Sage Sangiacomo, City Manager

PROCLAMATION

City of Ukiah

Recognizing

Hispanic Heritage Month in the City of Ukiah

Whereas, the City of Ukiah recognizes Hispanic Heritage Month, known in Spanish as "*Mes de la Herencia Hispana*," and is celebrated nationwide from September 15th through October 15th; and

Whereas, the City of Ukiah recognizes that Hispanic Heritage is American Heritage, which we see in our everyday life, such as on television, in the music we hear and dance to, and in the food we eat. We all benefit from the many contributions of Hispanic scientists, doctors, engineers, politicians, civil rights leaders, etc.; and

Whereas, the City of Ukiah recognizes the significant contributions of all Hispanic/Latino residents in our community including, City employees, Ukiah City Council members, educators, local Latino organizations, local business owners, and numerous grassroots leaders; and

Whereas, many Hispanic immigrants belonging to groups such as Dreamers, Temporary Protected Status holders, farm workers, and essential workers have come to this country and have fought for initiatives providing pathways to citizenship and the protection of the right to vote; and

Whereas, throughout the history of the United States, members of the Hispanic community have helped shape the social, political, and economic landscape of this country and our community; and

Whereas, the City of Ukiah is committed to recognizing Hispanic/Latino culture and heritage as an important part of the city and its strong, inclusive community and we encourage the community to educate themselves on Hispanic/Latino culture; and

Whereas, UVA (Ukiah Vecinos en Acción), and SPACE (School of Performing Arts Cultural Education), in collaboration with Periódico Al Punto, will host a celebration recognizing Hispanic Heritage Month on Friday, September the 19th at the Alex R. Thomas Plaza, Downtown Ukiah. Additional details will be provided through social media announcements by event organizers.

Therefore, be it resolved, the City Council of the City of Ukiah acknowledges the many contributions that our Hispanic, Latin Americans, Chicanos, Indigenous, Latinx residents make to our community and hereby proclaim September as:

Hispanic Heritage Month in the City of Ukiah

Signed and sealed, this 3rd day of September in the year Two Thousand and Twenty-Five.

_____

Douglas F. Crane, Mayor

Agenda Item No: 4.c.

MEETING DATE/TIME: 9/3/2025

ITEM NO: 2025-982

City of Ukiah

AGENDA SUMMARY REPORT

SUBJECT: Presentation from Greater Ukiah Business and Tourism Alliance Regarding Activities and Events.

DEPARTMENT: Economic Development

PREPARED BY: Shannon Riley, Deputy City Manager

PRESENTER: Katrina Kessen, the Executive Director of the Greater Ukiah Business and Tourism Alliance.

ATTACHMENTS:

1. Visit Ukiah Presentation

Summary: The Council will receive a presentation from Katrina Kessen, the Executive Director of the Greater Ukiah Business and Tourism Alliance.

Background: The Greater Ukiah Business and Tourism Alliance(GUBTA) represents the merger between the Chamber of Commerce, Ukiah Main Street Program, and Visit Ukiah. GUBTA plays an important role as a liaison to the business community, while also promoting the region to visitors and engaging in activities that support the preservation of the historic downtown. They manage the visitor center, which was designated an official California Welcome Center within the last year.

The City of Ukiah directly collaborates with GUBTA in the following ways:

- Community Champion Member of the Chamber of Commerce
- City of Ukiah collects Business Improvement District fees (through the business license process), which are passed through to GUBTA for the administration of the Ukiah Main Street Program
- City of Ukiah collects Transient Occupancy Tax from local lodging establishments, which is passed through to GUBTA for the administration of the Visit Ukiah program in accordance with a performance agreement between the organizations
- City of Ukiah is represented on the Executive Board by an appointed City Councilmember and a Staff Liaison

Additionally, the City of Ukiah and GUBTA partner for numerous community events, including Ukiah On Ice, Sundays in the Park, and Ukiah Country Pumpkinfest.

Discussion: Executive Director Katrina Kessen will provide a brief presentation regarding the activities and events of the Greater Ukiah Business and Tourism Alliance.

Recommended Action: Receive presentation from Katrina Kessen, Executive Director of the Greater Ukiah Business and Tourism Alliance.

BUDGET AMENDMENT REQUIRED: n/a

CURRENT BUDGET AMOUNT: n/a

PROPOSED BUDGET AMOUNT: n/a

FINANCING SOURCE: n/a

PREVIOUS CONTRACT/PURCHASE ORDER NO.: n/a

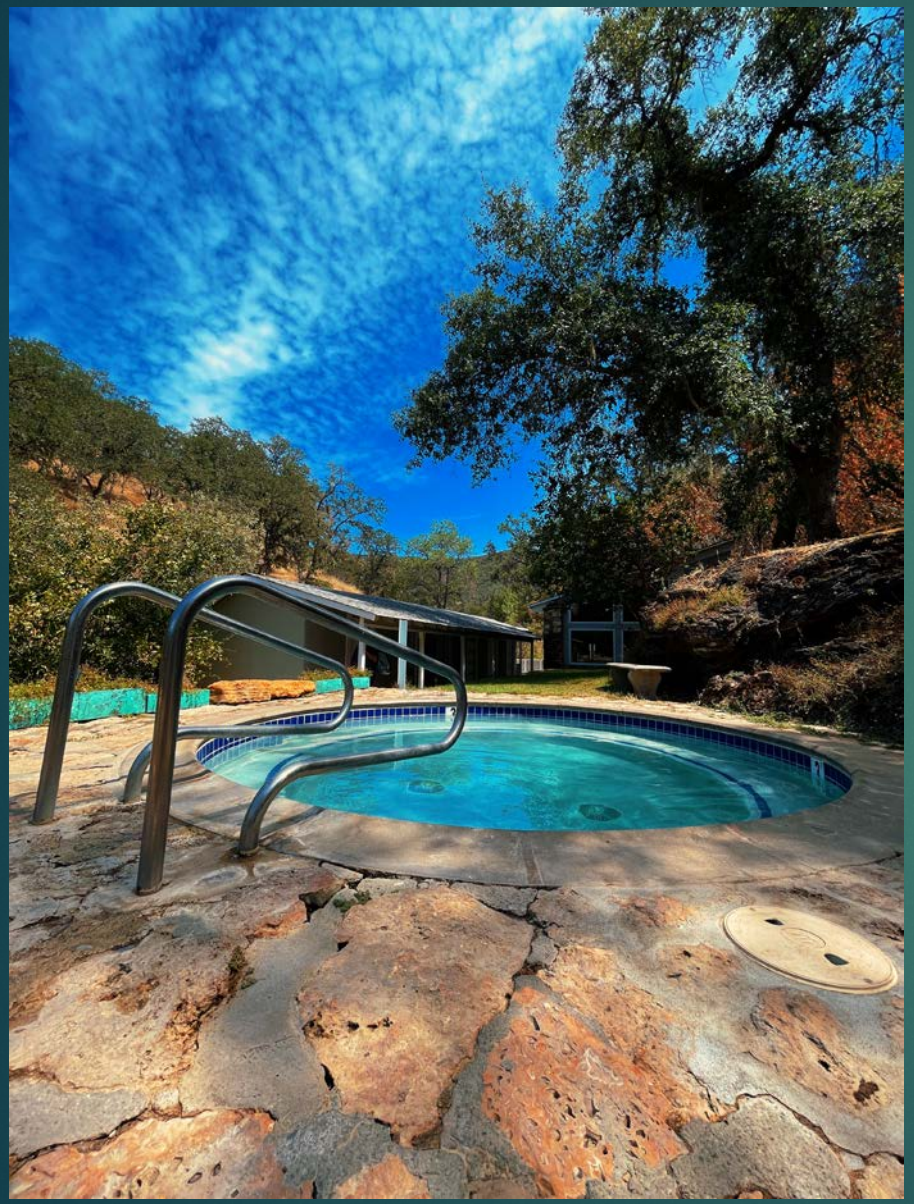
COORDINATED WITH: Katrina Kessen, Executive Director, Greater Ukiah Business and Tourism Alliance

Approved:
Sage Sangiacomo, City Manager

VISIT UKIAH

Annual Report

Tourism Matters to our Local Economy



Recent Report Statistics from Visit California

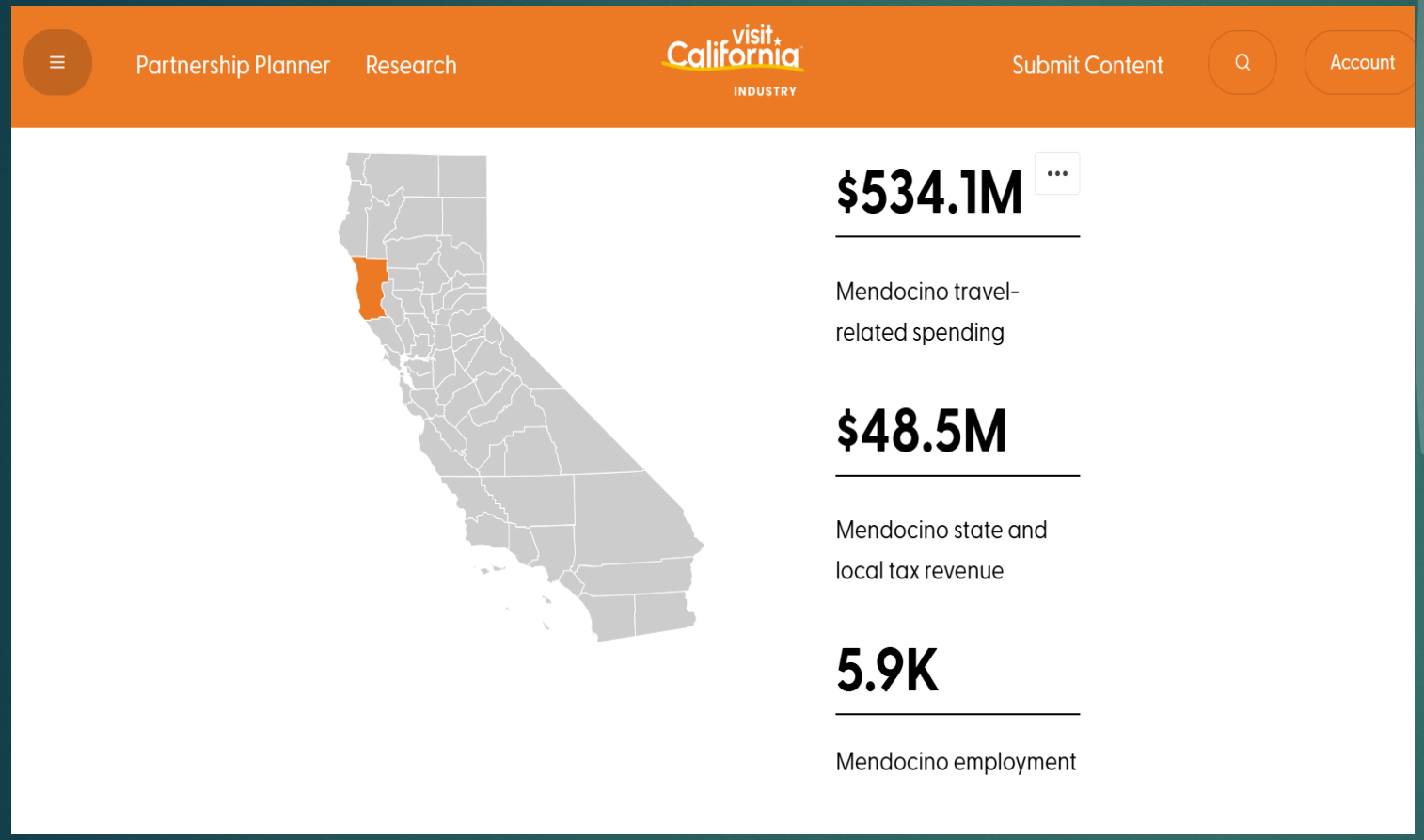
In 2024, travel spending in California reached $157.3 billion, a 3.0% increase from $152.7 billion in 2023.

Travel-generated employment grew by approximately 24,000 jobs in 2024, bringing the total number of travel-supported jobs in California to around 1.2 million — a 2.1% increase from the previous year.

Travel-generated state and local tax revenue grew to $12.6 billion in 2024, up from $12.3 billion in 2023 — a 3.1% increase.

Spending on accommodations grew to $34.7 billion in 2024, an increase of 2.4%. Spending on food service reached $36.8 billion, a 5.3% increase and the largest among commodity categories.

Visitors who stayed in a hotel, motel or short-term vacation rental (STVR) spent a combined $81.1 billion in 2024, an increase of 3.4% compared to 2023.



Transient Occupancy Revenue (TOT)

Adding Funds into our Community

Marketing and Advertising

Social Media – Facebook and Instagram

Seasonal Digital Guide – Summer launch

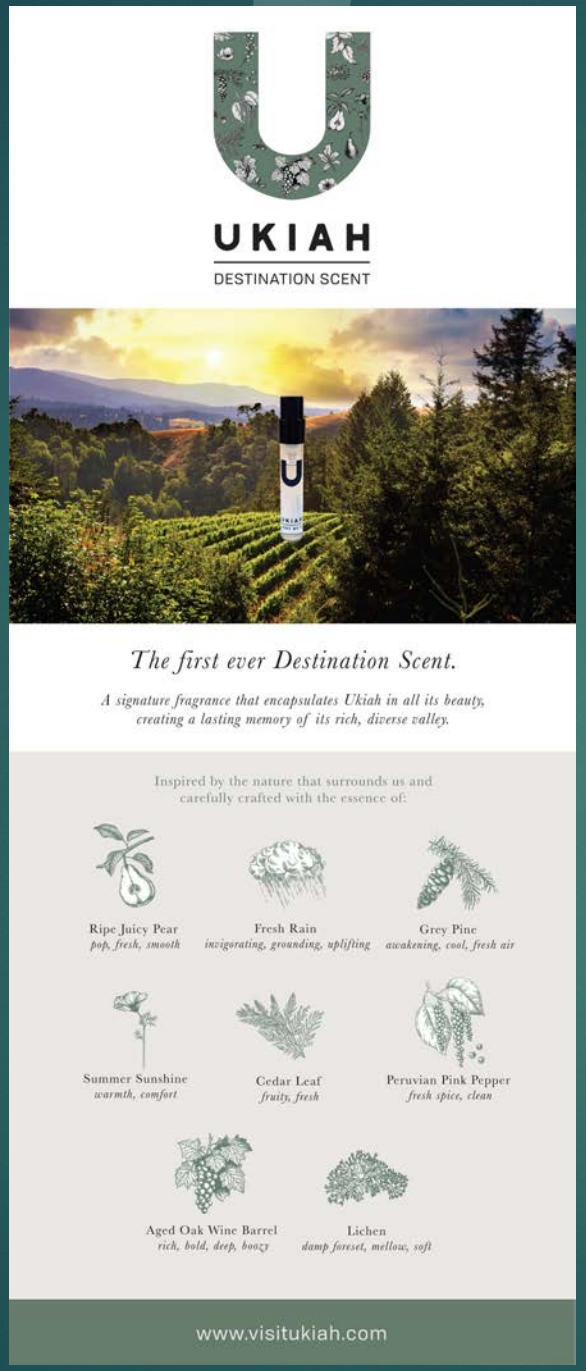
Print and Digital Placements

- Visit California Travel Guide and Road Trips
- Visit California Newsletters
- Partnerships with North Coast Tourism Council and Visit Mendocino County

Video – Leverage Partnerships and Collaborations

VISIT UKIAH

JUST BE U



UKIAH
DESTINATION SCENT

Ukiah's Destination Scent

Innovative Marketing and Brand Strategy

Local Mini Wine Shop in CA Welcome Center

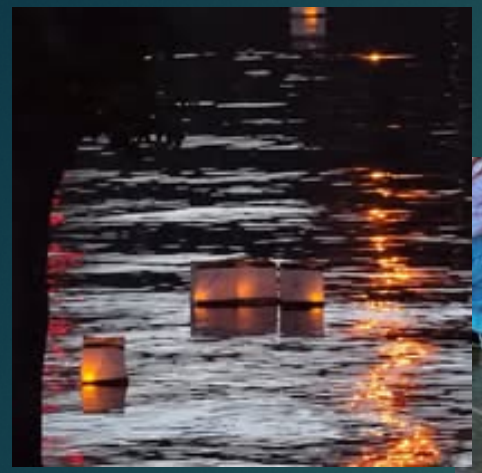
Telling the stories of Mendocino County wines and those that create them.

CA Welcome Center Ukiah Celebrates 2 Year Anniversary

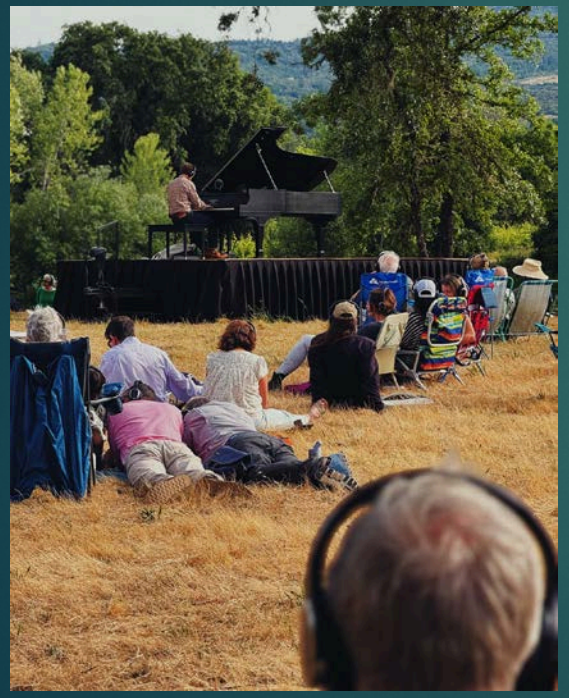
CA Welcome Center Ukiah hosts Visit California Open House

Trade Shows Conferences and Events

Events and Festivals



UKIAH'S HOMETOWN HOLIDAYS



Economic Development

Strength Through
Partnership

Lake Mendocino Project

Lake Mendocio Partnership with US Army Corps of Engineers

Created and launched Lake Mendocino brand

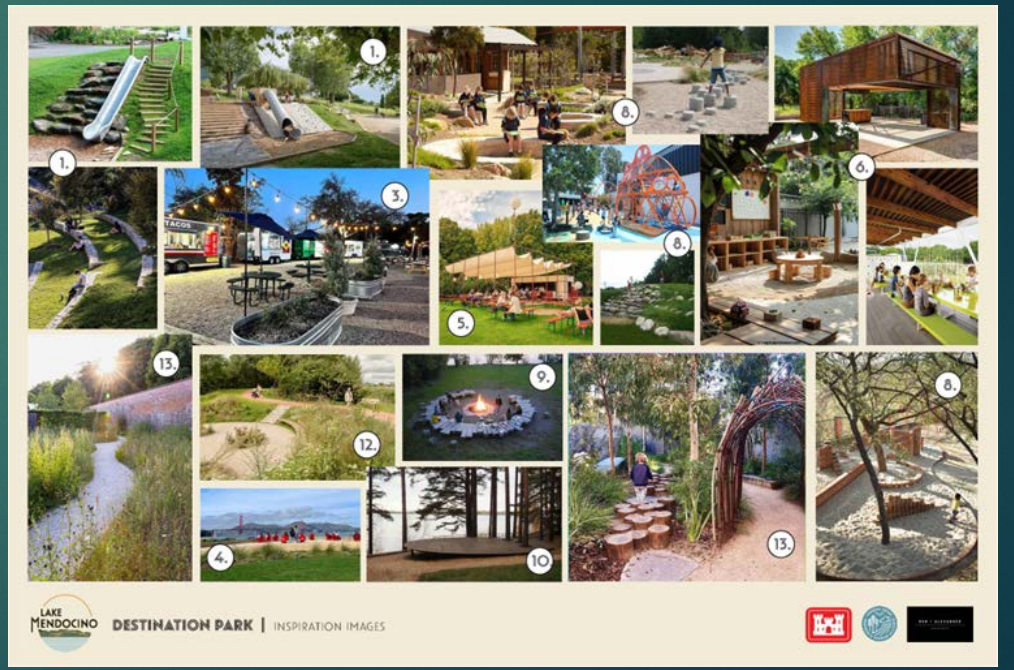
Strategic media campaigns for placemaking and storytelling

Designed and installed signage on North and South shores of Lake Mendocino

Activation of events at the lake

Conceptual design of Destination Park

Lake Mendocino Destination Park



VISIT UKIAH

JUST BE U

GATE 7

Partnership with PR/Marketing Firm:

Gate 7

VISIT UKIAH

JUST BE U

Earned Media

Strategic media hooks and distribution of press releases

Our objective is to generate media exposure in line with Ukiah's key messages across a variety of mass market, niche, and digital outlets via a robust pitching schedule program.

Media Target Segment	Headline Angle	Key Messaging Pillar
Travel, Lifestyle	The NorCal Town Worth Going the Extra Mile For	Detour Destination
Travel, Wine & Culinary	Sip Sustainably: Inside California's Greenest Wine Region	Wine Region
Millennial, Travel	Bohemian Roots and Back-to-the-Land Living in Ukiah	Culture & Community
Arts & Culture	Art, Soul and Storytelling in One of NorCal's Most Creative Towns	Culture & Creativity
Travel, Wine & Culinary	Organic Vines and Untouched Views: Ukiah's Wine Country Reinvented	Wine Region
Arts & Culture	How One Tiny Town Became a Magnet for Makers and Dreamers	Creativity, Community
Outdoors, Wellness	Where Wellness Meets Woodstock: Ukiah's Free-Spirited Revival	Wellness Offering
Travel, Lifestyle	The Road to Real California: How to Detour Like a Local	Detour Destination
Outdoors, Wellness	Culture on the Edge of the Redwoods	Adventure
Travel Trade	Beyond Napa: Why Ukiah is One of the California Wine Regions You Must Visit	Detour Destination, Wine Region

GATE 7

Partnership with

Mendocino Winegrowers, Inc. (MWI)

Large Enough to Serve You.

Small Enough to Care.

Ukiah is a place where you can “Just Be U”.

VISIT UKIAH

JUST BE U

CITY OF UKIAH
CITY COUNCIL MINUTES
Special Meeting
CIVIC CENTER COUNCIL CHAMBERS
300 Seminary Avenue, Ukiah, CA 95482

Virtual Meeting Link: *https://us06web.zoom.us/j/84099574806*

August 20, 2025
5:00 p.m.

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1. ROLL CALL AND PLEDGE OF ALLEGIANCE

Ukiah City Council met at a Special Meeting on August 20, 2025, having been legally noticed on August 18, 2025. The meeting was held in person and virtually at the following link: *https://us06web.zoom.us/j/84099574806*. Mayor Crane called the meeting to order at 4:19 p.m. Roll was taken with the following **Councilmembers Present:** Mari Rodin *(arriving at 4:32 p.m.),* Heather Criss, Juan V. Orozco, Susan Sher, and Douglas, F. Crane. **Staff Present:** Sage Sangiacomo, City Manager; David Rapport, City Attorney; and Kristine Lawler, City Clerk.

MAYOR CRANE PRESIDING.

Mayor Crane announced that the Council would give the Pledge of at the regular meeting.

COUNCIL ADJOURNED TO CLOSED SESSION AT 4:40 P.M.

2. AUDIENCE COMMENTS ON NON-AGENDA ITEMS

No public comment was received.

3. CLOSED SESSION

a. Conference with Legal Counsel – Anticipated Litigation
(Government Code Section 54956.9(d)(4))
Initiation of litigation (1 case)

b. Conference with Legal Counsel – Existing Litigation
(Government Code Section 54956.9(d)(1))
Name of case: Vichy Springs Resort v. City of Ukiah, Et Al; Case No. SCUK-CVPT-2018-70200

c. Conference with Legal Counsel – Existing Litigation
(Government Code Section 54956.9(d)(1))
Name of case: Vichy Springs Resort, Inc v. City of Ukiah, et al.; Case No. 24-cv-07106-JSC

d. Conference with Real Property Negotiators
(Cal. Gov't Code Section 54956.8)
Property: APN Nos: 184-080-37;184-080-36; 184-090-01; 184-090-07; 184-090-06; 184-100-04
Negotiator: Sage Sangiacomo, City Manager
Negotiating Parties: Henry's Original
Under Negotiation: Price & Terms of Payment

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e. Conference with Real Property Negotiators
(Cal. Gov't Code Section 54956.8)
Property: APN Nos: 170-030-05; 170-030-03; 170-010-05; 170-020-07; 170-020-11; 170-040-03; 170-020-08
Negotiator: Sage Sangiacomo, City Manager
Negotiating Parties: Project Ovis LLC
Under Negotiation: Price & Terms of Payment

f. Conference with Labor Negotiator (54957.6)
Agency Designated Representative: Sage Sangiacomo, City Manager
Employee Organizations: All bargaining units
Unrepresented Employee: Police Chief

4. ADJOURNMENT

There being no further business, the meeting adjourned at 5:10 p.m.

_____
Kristine Lawler, City Clerk

DRAFT

CITY OF UKIAH
CITY COUNCIL MINUTES
Regular Meeting
CIVIC CENTER COUNCIL CHAMBERS
300 Seminary Avenue, Ukiah, CA 95482
Virtual Meeting Link: *https://us06web.zoom.us/j/87064188294*

August 20, 2025
5:15 p.m.

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1. ROLL CALL

Ukiah City Council met at a Regular Meeting on August 20, 2025, having been legally noticed on August 15, 2025. The meeting was held in person and virtually at the following link: *https://us06web.zoom.us/j/87064188294*. Mayor Crane called the meeting to order at 5:16 p.m. Roll was taken with the following **Councilmembers Present:** Mari Rodin, Heather Criss, Juan V. Orozco, Susan Sher, and Douglas, F. Crane. **Staff Present:** Sage Sangiacomo, City Manager; David Rapport, City Attorney; and Kristine Lawler, City Clerk.

MAYOR CRANE PRESIDING.

2. PLEDGE OF ALLEGIANCE

The Pledge of Allegiance was led by Councilmember Orozco.

3. AB 2449 NOTIFICATIONS AND CONSIDERATIONS

No notifications were received.

4. PROCLAMATIONS/INTRODUCTIONS/PRESENTATIONS

a. Proclamation Recognizing the 105th Anniversary of the Ratification of the 19th Amendment to the United States Constitution and Women's Equality Day.

Presenter: Councilmember Criss.

Proclamation was received by Janice Lombardi and Ky Mayers, Mendocino Women's Political Caucus.

5. PETITIONS AND COMMUNICATIONS

City Clerk, Kristine Lawler, stated that all communications had been distributed including one received for agenda item 15d received at 5:10 p.m.

6. APPROVAL OF MINUTES

a. Approval of the Minutes for the July 16, 2025, Regular Meeting.

Motion/Second: Orozco/Sher to approve Minutes of July 16, 2025, a regular meeting, as submitted. Motion **carried** by the following roll call votes: AYES: Rodin, Criss, Orozco, Sher, and Crane. NOES: None. ABSENT: None. ABSTAIN: None.

7. RIGHT TO APPEAL DECISION

Mayor Crane read the right to appeal a decision.

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8. CONSENT CALENDAR

a. Report of Disbursements for the Month of June 2025 – *Finance.*

b. ~~Adoption of a Resolution to Enter into a Third Phase Agreement for an Energy Storage Service Agreement with Trolley Pass Project, LLC and Authorize the City Manager to Negotiate and Execute the Agreement – *Electric Utility*~~ – *Pulled by Vice Mayor Sher and placed as agenda item 14f.*

c. Notification to Council of Contract No. 2526-080 with Peterson Mechanical Inc. for the Emergency Replacement of the HVAC System at the Grandi Substation, in the Amount of $44,700; and Approval of Corresponding Budget Amendment – *Electric Utility.*

d. Notification of Purchase of the Outfitting of Two Ukiah Police Department Ford Explorer Interceptors with Required Police Equipment by Lehr Auto Electric for the Amount of $44,832.90 – *Police.*

e. Review Landfill Closure Financial Plan Update and Authorize the Filing of the Update – *Finance.*

f. Approval of Contract *(2526-099)* with EBA Engineers for Landfill Closure Consulting and Engineering Services in the Amount of $250,000 – *Public Works.*

g. Consideration of Approval of Reclassification of the Chief Resilience Officer Position within the Community Development Department; and Approval of Corresponding Budget Amendment – *Community Development.*

h. Consideration of Adoption of Resolution *(2025-40)* Reappointing David Lieberman to the Diversity and Equity Standing Committee – *City Clerk.*

i. Adoption of a Resolution *(2025-41)* Amending Utility Deposit Requirements, Fees, and Compliance Measures – *Finance.*

j. Consideration of Approval of a Professional Services Agreement *(2526-106)* with AP Triton, LLC for Continued Consulting Services for the Ukiah Valley Fire Authority's Pre-Hospital Emergency Medical Services for Fiscal Year 2025-26 in an Amount Not to Exceed $60,000 Plus Reimbursable Travel and Other Direct Expenses; and Authorize the City Manager to Negotiate and Execute the Agreement – *Fire.*

Public Comment: David Lieberman –Regarding 8h and his correspondence.

Motion/Second: Criss/Sher to approve Consent Calendar Items 8a and 8c-8j, as submitted. Motion **carried** by the following roll call votes: AYES: Rodin, Criss, Orozco, Sher, and Crane. NOES: None. ABSENT: None. ABSTAIN: None.

9. AUDIENCE COMMENTS ON NON-AGENDA ITEMS

Public Comment: Alex Bland – Regarding proposal to remove trees on School Street.

10. COUNCIL REPORTS

Presenters: Councilmember Criss, Vice Mayor Sher, and Councilmember Rodin.

11. CITY MANAGER/CITY CLERK REPORTS

Presenters: Sage Sangiacomo, City Manager; and

- **Construction Update** – Tim Eriksen, Public Works Director / City Engineer.

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12. PUBLIC HEARINGS (5:30 PM)

a. Introduction by Title Only of an Ordinance to Establish an Administrative Use Permit Process, Reorganize Performance Standards, and Clarify Related Zoning and Animal Keeping Provisions in the Ukiah City Code.

Presenters: Katherine Schaefers, Planning Manager and Craig Schlatter, Community Development Director.

PUBLIC HEARING OPENED AT 6:07 P.M.

No public comment was received.

PUBLIC HEARING CLOSED AT 6:08 P.M.

Motion/Second: Rodin/Criss to introduce the ordinance by title only. Motion **carried** by the following roll call votes: AYES: Rodin, Criss, Orozco, Sher, and Crane. NOES: None. ABSENT: None. ABSTAIN: None.

City Clerk, Kristine Lawler, read the following ordinance title into the record:

ORDINANCE OF THE CITY COUNCIL OF THE CITY OF UKIAH ADDING A NEW SECTION 9269 AND A NEW ARTICLE 23 TO DIVISION 9, CHAPTER 2 OF THE CITY CODE TO ESTABLISH PROCEDURES AND PERFORMANCE STANDARDS FOR THE ISSUANCE OF ADMINSITRATIVE USE PERMITS

Motion/Second: Criss/Sher to introduce an ordinance amending the Ukiah City Code to establish an Administrative Use Permit process, reorganize and consolidate performance standards, and clarify related zoning and animal keeping provisions in the Ukiah City Code. Motion **carried** by the following roll call votes: AYES: Rodin, Criss, Orozco, Sher, and Crane. NOES: None. ABSENT: None. ABSTAIN: None.

b. Introduction by Title Only of an Ordinance Amendment to Update the City's Accessory Dwelling Unit and Junior Accessory Dwelling Unit Regulations in Ukiah City Code Ensuring Compliance with State Law and the Findings of the California Department of Housing & Community Development.

Presenter: Jesse Davis, Chief Planning Manager.

PUBLIC HEARING OPENED AT 6:21 P.M.

No public comment was received.

PUBLIC HEARING CLOSED AT 6:21 P.M.

Motion/Second: Criss/Rodin to introduce the ordinance by title only. Motion **carried** by the following roll call votes: AYES: Rodin, Criss, Orozco, Sher, and Crane. NOES: None. ABSENT: None. ABSTAIN: None.

City Clerk, Kristine Lawler, read the following ordinance title into the record:

ORDINANCE OF THE CITY COUNCIL OF THE CITY OF UKIAH AMENDING VARIOUS SECTIONS OF THE UKIAH CITY CODE REGULATING ACCESSORY DWELLING UNITS AND JUNIOR ACCESSORY DWELLING UNITS

DRAFT

Motion/Second: Rodin/Criss to introduce an ordinance amendment to update the City's accessory dwelling unit and junior accessory dwelling unit regulations in Ukiah City Code ensuring compliance with state law and the findings of the California Department of Housing & Community Development. Motion **carried** by the following roll call votes: AYES: Rodin, Criss, Orozco, Sher, and Crane. NOES: None. ABSENT: None. ABSTAIN: None.

c. Annual Review and Consideration of the Fee Schedule for Community Services, Including Recreation Programs, Sports Fields, Parks, Municipal Pools, Ukiah Valley Conference Center, and the Grace Hudson Museum.

Presenter: Jake Burgess, Community Services Supervisor.

PUBLIC HEARING OPENED AT 6:37 P.M.

No public comment was received.

PUBLIC HEARING CLOSED AT 6:37 P.M.

Motion/Second: Rodin/Criss to adopt the proposed changes to rental rates and user fees. Motion **carried** by the following roll call votes: AYES: Rodin, Criss, Orozco, Sher, and Crane. NOES: None. ABSENT: None. ABSTAIN: None.

13. UNFINISHED BUSINESS

a. Receive Report Regarding the Economic Development and Financing Corporation (EDFC); Consideration of Request for Funding from EDFC; and Authorize the City Manager to Negotiate and Execute Performance Agreement Between the City of Ukiah and EDFC in the Amount of $12,455.25 for FY 2025-26.

Presenters: Shannon Riley, Deputy City Manager and Robert Gernert, EDFC Executive Director.

No public comment was received.

***Council Directive** for Deputy City Manager to send a copy of the EDFC portfolio report to Council.*

Motion/Second: Rodin/Criss to receive report regarding the Economic Development and Financing Corporation (EDFC) and authorize the City Manager to negotiate and execute a Performance Agreement *(2526-100)* between the City of Ukiah and EDFC. Motion **carried** by the following roll call votes: AYES: Rodin, Criss, Orozco, Sher, and Crane. NOES: None. ABSENT: None. ABSTAIN: None.

b. Receive Report on the Emergency Contract Assigned to Diamond D Construction for the Emergency Repair of the Western Hills Mudslide at the City Water Tank PZ-1 and Terminate the Emergency Action.

Presenter: Sage Sangiacomo, City Manager.

No public comment was received.

Motion/Second: Sher/Rodin to receive report on the emergency contract *(PO 48757)* assigned to Diamond D Construction for the emergency repair of the Western Hills mudslide at the City water tank PZ1-N and terminate the emergency action. Motion **carried** by the following roll call votes: AYES: Rodin, Criss, Orozco, Sher, and Crane. NOES: None. ABSENT: None. ABSTAIN: None.

RECESS: 6:59 – 7:06 P.M.

DRAFT

14. NEW BUSINESS

a. Approve a Public Private Partnership to (1) Design/Build the Grant-Funded Ukiah Gigabit Fiber Project for a Not to Exceed Amount of $3,277,654, and (2) Lease, Operate, and Maintain the City's Fiber Optic Network for a 35-Year Term; and Authorize the City Manager to Negotiate and Execute the Agreement.

Presenters: Andrea Trincado, Project and Grants Administrator and Jim Robbins, Housing and Grants Manager.

Vero Fiber Networks, LLC Representative Comment: Evan Biagi, Chief Revenue Officer.

No public comment was received.

Motion/Second: Rodin/Criss to approve a Public Private Partnership Agreement *(2526-101)* with Vero Fiber Networks, LLC, to (1) design/build the grant-funded Ukiah Gigabit Fiber Project for a not to exceed amount of $3,277,654, and (2) lease, operate and maintain the City's fiber optic network for a 35-year term; and authorize the City Manager to negotiate and execute the agreement. Motion **carried** by the following roll call votes: AYES: Rodin, Criss, Orozco, Sher, and Crane. NOES: None. ABSENT: None. ABSTAIN: None.

b. Approve a Sole Source Contract with Utility Design Services, LLC, for Construction Engineering and Inspection Services for the Ukiah Gigabit Fiber Project for a Total Not to Exceed Amount of $328,575; and Authorize the City Manager to Execute Contract Documents.

Presenter: Andrea Trincado, Project and Grants Administrator.

No public comment was received.

Motion/Second: Criss/Rodin to approve a sole source contract *(2526-102)* with Utility Design Services, LLC, for engineering and inspection services for the Ukiah Gigabit Fiber Project for a total amount not to exceed $337,271; and authorize the City Manager to negotiate and execute contract documents, and make any necessary budget adjustments. Motion **carried** by the following roll call votes: AYES: Rodin, Criss, Orozco, Sher, and Crane. NOES: None. ABSENT: None. ABSTAIN: None.

c. Designation of Voting Delegate and Possible Alternate for the League of California Cities Annual Conference – October 8-10, 2025.

Presenter: Sage Sangiacomo, City Manager.

No public comment was received.

Motion/Second: Sher/Rodin to designate Councilmember Orozco as the Voting Delegate, and Councilmember Criss as the Alternate, to represent the City of Ukiah for the 2025 League Annual Conference; and authorize the City Clerk to submit the Voting Delegate/Alternate Form on their behalf. Motion **carried** by the following roll call votes: AYES: Rodin, Criss, Orozco, Sher, and Crane. NOES: None. ABSENT: None. ABSTAIN: None.

d. Discussion and Possible Action Regarding the Cancellation of the October 1, 2025, Regular City Council Meeting, with the Option for the Mayor and/or City Manager to Call for a Special Meeting on an Alternate Date if Time-Sensitive Business Arises.

Presenter: Sage Sangiacomo, City Manager.

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No public comment was received.

Motion/Second: Crane/Orozco to approve the cancellation of the October 1, 2025, Regular City Council Meeting, with the option for the Mayor and/or City Manager to call for a special meeting on an alternate date if time-sensitive business arises. Motion **carried** by the following roll call votes: AYES: Rodin, Criss, Orozco, Sher, and Crane. NOES: None. ABSENT: None. ABSTAIN: None.

e. Receive Updates on City Council Committee and Ad Hoc Assignments and, if Necessary, Consider Modifications to Assignments and/or the Creation/Elimination of Ad hoc(s).

Presenters: Sage Sangiacomo, City Manager and Vice Mayor Sher.

Motion/Second: Criss/Rodin to create a CalPERS Ad Hoc consisting of Mayor Crane and Councilmember Orozco. Motion **carried** by the following roll call votes: AYES: Rodin, Criss, Orozco, Sher, and Crane. NOES: None. ABSENT: None. ABSTAIN: None.

Council Directive to send information regarding the Sun House Guild to Vice Mayor Sher.

f. Adoption of a Resolution to Enter into a Third Phase Agreement for an Energy Storage Service Agreement with Trolley Pass Project, LLC and Authorize the City Manager to Negotiate and Execute the Agreement – *From Consent Calendar Agenda Item 8b*.

Presenter: Cindy Sauers, Electric Utility Director.

No public comment was received.

Motion/Second: Rodin/Sher to adopt resolution *(2025-42)* authorizing the City of ukiah to enter into a Third Phase Agreement for Energy Storage Services Agreement *(2526-103)* with Trolley Pass Project, LLC (ESSA), including any non-substantive modifications to the ESSA and Third Phase Agreement approved by the Northern California Power Agency's General Counsel, and authorize the City Manager to negotiate and execute the Agreement. Motion **carried** by the following roll call votes: AYES: Rodin, Criss, Orozco, Sher, and Crane. NOES: None. ABSENT: None. ABSTAIN: None.

THE CITY COUNCIL ADJOURNED TO CLOSED SESSION AT 8:10 P.M.

15. CLOSED SESSION

a. Conference with Legal Counsel – Anticipated Litigation
(Government Code Section 54956.9(d)(4))
Initiation of litigation (1 case)

b. Conference with Legal Counsel – Existing Litigation
(Government Code Section 54956.9(d)(1))
Name of case: Vichy Springs Resort v. City of Ukiah, Et Al; Case No. SCUK-CVPT-2018-70200

c. Conference with Legal Counsel – Existing Litigation
(Government Code Section 54956.9(d)(1))
Name of case: Vichy Springs Resort, Inc v. City of Ukiah, et al.; Case No. 24-cv-07106-JSC

d. Conference with Real Property Negotiators
(Cal. Gov't Code Section 54956.8)
Property: APN Nos: 184-080-37;184-080-36; 184-090-01; 184-090-07; 184-090-06; 184-100-04
Negotiator: Sage Sangiacomo, City Manager
Negotiating Parties: Henry's Original
Under Negotiation: Price & Terms of Payment

e. Conference with Real Property Negotiators
(Cal. Gov't Code Section 54956.8)
Property: APN Nos: 170-030-05; 170-030-03; 170-010-05; 170-020-07; 170-020-11; 170-040-03; 170-020-08
Negotiator: Sage Sangiacomo, City Manager
Negotiating Parties: Project Ovis LLC
Under Negotiation: Price & Terms of Payment

f. Conference with Labor Negotiator (54957.6)
Agency Designated Representative: Sage Sangiacomo, City Manager
Employee Organizations: All bargaining units
Unrepresented Employee: Police Chief

No action reported; direction provided to Staff.

16. ADJOURNMENT

There being no further business, the meeting adjourned at 9:35 p.m.

_____
Kristine Lawler, CMC
City Clerk

DRAFT

Agenda Item No: 8.a.

MEETING DATE/TIME: 9/3/2025

ITEM NO: 2022-1479

City of Ukiah

AGENDA SUMMARY REPORT

SUBJECT: Report of Disbursements for the Month of July 2025.

DEPARTMENT: Finance **PREPARED BY:** MaryJo Reynolds

PRESENTER: Consent Calendar

ATTACHMENTS:

1. July 2025 Summary of Disbursements
2. Account Codes for Reference
3. Object Codes for Reference
4. July 2025 Disbursement Detail

Summary: The Council will review and consider approval of the report of disbursements for the month of July 2025.

Background: Payments made during the month of July 2025 are summarized in the Report of Disbursements. Further details are supplied on the Schedule of Bills, representing the four (5) individual payment cycles within the month.

Accounts Payable Check Numbers (City & UVFA): 3063390-3063465; 3063466-3063570; 3063571-3063657; 3063658-3063773

Accounts Payable Wire Transfer: 141,142,143,144

Payroll Check Numbers: 518026-518153; 518154-518273
Payroll Manual Check Numbers: 518151-518153,518154,518271-518273;

Direct Deposit Numbers: 138130-138510; 138511-138894

Manual Direct Deposit Numbers: NA

Void Check Numbers: 518096, 3062962, 3063004, 3061788, 3063676

Void Direct Deposit Numbers: N/A

Discussion: This report is submitted in accordance with Ukiah City Code Division 1, Chapter 7, Article 1.

Attachment #1: July 2025 Summary of Disbursements
Attachment #2: Account Codes for Reference
Attachment #3: Object Codes for Reference
Attachment #4: July 2025 Disbursement Detail

Recommended Action: Approve the report of disbursements for the month of July 2025.

BUDGET AMENDMENT REQUIRED: N/A

CURRENT BUDGET AMOUNT: N/A

PROPOSED BUDGET AMOUNT: N/A

FINANCING SOURCE: N/A

REVENUE: N/A **GRANT:** N/A

PREVIOUS CONTRACT/PURCHASE ORDER NO.: N/A

COORDINATED WITH: N/A

STRATEGIC PLAN (SP): N/A

CLIMATE INITIATIVES (CI): N/A

GENERAL PLAN ELEMENTS (GP): N/A

Approved:
Sage Sangiacomo, City Manager

CITY OF UKIAH
REPORT OF DISBURSEMENTS
REGISTER OF PAYROLL AND DEMAND PAYMENTS
FOR THE MONTH OF JULY 2025

FUNDS:

100	General Fund	$328,906.08	700	Sanitary Disposal Site Fund	$7,569.86
101	GF-(Sub-Fund) Visit Ukiah		701	Landfill Corrective Fund	
105	GF-(Sub-Fund) Fire Authority	$78,172.68	702	Disposal Closure Reserve Fund	
106	USDA Forest Serv CWDG	$18,857.23	704	Post Closure Fund - Solid Waste	
110	Special General Fund		710	Ambulance Services Fund	$143,953.03
120	Streets Capital Improvement	$56,585.59	720	Golf Fund	$43,482.27
130	Gov't'l Debt SVC/Reserve Fund		730	Confernence Center Fund	$8,098.32
131	Debt Service Reserve 2022 LRB		750	Visit Ukiah	
200	City Adminstrative Services	$114,409.05	777	Airport Fund	$64,323.07
201	Worker's Comp Fund	$13,737.73	778	Airport Capital Improvement Fund	
202	Liability Fund	$23,589.75	779	Special Aviation Fund	
203	Garage Fund	$6,889.96	800	Electric Fund	$1,181,227.67
204	Purchasing Fund	$69.70	801	Electric Capital Reserve Fund	$17,801.91
205	Billing & Collections Fund	$23,191.84	803	Lake Mendocino Bond Reserve	
206	Public Safety Dispatch Fund	$18,679.93	805	Street Lighting Fund	$12,225.53
207	Payroll Posting Fund	$3,898.74	806	Public Benefits Fund	$5,610.92
208	Building Maintenance/Corp Yard Fund	$45,731.62	807	Cap and Trade	
209	IT Fund	$27,751.91	808	Electric Low Carbon Fuel STDS	
220	Equipment Reserve Fund		820	Water Fund	$912,467.10
249	City Housing Bond Proceeds		821	Water Capital Reserve Fund	$456,226.63
250	Special Revenue Fund		822	Water Capital Improvement Fund	$16,403.98
251	Special Projects Reserve Fund		830	Recycled Water Fund	$844,956.19
252	Streets/ROW Improvement Fund	$489,625.26	840	City/District Sewer Fund	$198,587.73
253	CITY PROP 172		841	Sewer Contruction Fund	
300	Park Development Fund		843	Sewer Capital Fund	
301	Anton Stadium Fund		900	Special Deposit Trust	$22,904.16
302	Observatory Park Fund		901	General Service (Accts Recv)	
303	Playground & Park Amenities Fund		902	U.S.W. Billing & Collection	$64,468.10
304	Swimming Pool Fund		903	Public Safety - AB 109	$0.00
305	Riverside Park Fund		905	Federal Emergency Shelter Grant	
306	Skate Park Fund		905	Mendocino Emergency Service Authority	
308	Opioid Settlement Fund		911	Russian River Watershed Association	$52,798.11
310	Museum Grants	$0.00	915	UVFD	$46,741.60
311	Alex Rorbaugh Recreation Center Fund	$6,225.08	916	UVFD PROP 172	
312	Downtown Business Improvement Fund		917	UVFD Measure B	
313	LMIHF Housing Asset Fund		918	UVFD Mitigation	
314	Winter Special Events		920	MSWMA Operations	$32,902.01
315	Advanced Planning Fund	$22.53	922	Millview County Water District	$55,735.28
316	SPECIAL RECREATION EVENTS		923	Milview Capital Charge	
500	2106 Gas Tax Fund	$643,827.73	927	Redwood Valley Water District	$123,542.70
501	2107 Gas Tax Fund		932	Willow Water District Operations	$1,527.60
503	2105 Gas Tax Fund		940	Sanitation District Special Fund	
505	Signalization Fund		942	Rate Stabilization - UVSD Fund	
506	Bridge Fund		943	Sanitation District Capital Improvement Fund	
507	1998 STIP Augmentation Fund		952	REDIP Sewer Enterprise Fund	
508	SB325 Reimbursement Fund		960	Community Redevelopment Agency	
509	S.T.P. Fund	$891.75	961	RDA Housing Pass-Through	
510	Trans-Traffic Congest Relief Fund		962	Redevelopment Housing Fund	
511	Rail Trail Fund	$540,614.59	963	Housing Debt	
600	Community Development Block Grant		964	RDA Capital Pass-Through	
601	EDBG 94-333 Revolving Loan		965	Redevelopment Capital Improvement Fund	
602	Community Development Fund		966	Redevelopment Debt Service	
603	08-HOME-4688		967	Housing Bond Proceeds	
604	CDBG Grant 09-STBG-6417		968	Non-Housing Bond Proceeds	
605	11-HOME-7654 Fund	$0.00	969	RDA Obligation Retirement Fund	
606	CDBG Grant 10-EDEF-7261		844/944	Sewer Capital Projects Fund	$19,002.50
607	Prop 84 Grant Fund				
609	13-CDBG-8940				
610	City RDA Projects Fund				
613	Home Program Activities				
620	CASP Train				
630	Asset Seizure Fund	$4,072.15			
631	Asset Seizure Fund (Drug/Alcohol)			Retainage Withheld	
633	H & S Education 11489(B)(2)(A1)		611	CDBG 16-CDBG-11147	
634	Federal Asset Seizure Grants				
635	SUP Law Enforcement Service Fund				
636	CBTHP Officer				
637	Local Law Enforcement Block Grant				
638	Asset Forfeiture 11470.2 H & S	$2,994.00			
639	Special Revenue - Police				
640	Parking District Fund	$1,136.53			
670	Federal American Rescue Fund				
691	Museum Fund				
695	Transfer Station Fund				
696	Solid Waste Mitigation Fund	$88.43			

PAYROLL CHECK NUMBERS: 518026-518153
DIRECT DEPOSIT NUMBERS: 138130-138510
PAYROLL PERIOD: 06/22/25-07/05/25

PAYROLL CHECK NUMBERS: 518154-518273
DIRECT DEPOSIT NUMBERS: 138511-138894
PAYROLL PERIOD: 07/06/25-07/19/25

PAYROLL CHECK NUMBERS:
DIRECT DEPOST NUMBERS:
PAYROLL PERIOD:

VOID CHECK NUMBERS:
3062962, 3063004, 3061788, 3063676, 518096

MANUAL CHECK NUMBERS:
518151-518154;518271-518273

WIRE TRANSFER NUMBERS:

TOTAL DEMAND PAYMENTS- A/P CHECKS	$6,782,526.13
TOTAL DEMAND PAYMENTS- EFT's	$0.00
TOTAL PAYROLL CHECKS & DIRECT DEPOSITS	$1,824,122.76
TOTAL PAYROLL EFT's (TAXES, PERS, VENDORS)	$956,419.23
* vendor name(if applicable)	
TOTAL PAYMENTS	$9,563,068.12

CERTIFICATION OF CITY CLERK
This register of Payroll and Demand Payments was duly approved by the City Council on _____.

City Clerk

APPROVAL OF CITY MANAGER
I have examined this Register and approve same.

City Manager

CERTIFICATION OF DIRECTOR OF FINANCE
I have audited this Register and approve for accuracy and available funds.

Director of Finance

10000000	GENERAL FUND
10017200	SUCCESSOR AGENCY
10020000	POLICE - GEN FUND
10020210	POLICE PATROL
10020214	POLICE VOLUNTEERS
10020216	COPS GRANT
10020217	POLICE ANIMAL CONTROL
10020218	POLICE CSO
10020220	CODE ENFORCEMENT
10020224	MAJOR CRIMES TASK FORCE
10021210	CITY FIRE
10022100	PARKS
10022300	AQUATICS
10022700	MUSEUM - GEN FUND
10022810	RECREATION ADMINISTRATION
10022821	ADULT BASKETBALL
10022822	ADULT SOFTBALL
10022824	CO-ED VOLLEYBALL
10022831	YOUTH BASKETBALL
10022832	YOUTH SOFTBALL
10022840	DAY CAMP
10022850	CLASSES & CLINICS
10022860	SPECIAL ACTIVITIES
10022900	COMM SVCS SPECIAL SERVICES
10023100	PLANNING SERVICES
10023110	CURRENT PLANNING
10023300	BUILDING INSPECTION
10023320	BUILDING INSPECTION
10023411	CDBG GENERAL ADMIN
10024200	ENGINEERING/STREETS
10024210	ENGINEERING
10024214	TRAFFIC SIGNAL OPERATIONS
10024224	STORM WATER
10024310	CORP YARD MAINTENANCE
10024620	STREETS
10100000	GF- (SUB-FUND) VISIT UKIAH
10112700	GF-(SUB-FUND) VISIT UKIAH
10500000	MEASURE S GENERAL FUND
10521210	FIRE AUTHORITY
10600000	USDA FOREST SERV CWDG
12000000	STREET REHABILITATION
12024200	PUBLIC WORKS ENGINEERING
13000000	GOV'TL DEBT SVC/RESERVE FUND
13100000	DEBT SERVICE RESERVE 2022 LRB
20000000	CITY ADMINISTRATIVE SERVICES
20010000	CITY COUNCIL
20012100	CITY MANAGER
20012300	COMMUNITY OUTREACH/PUBLIC INFO
20012500	CITY CLERK
20012600	ECONOMIC DEVELOPMENT
20012800	EMERGENCY MANAGEMENT
20013210	ACCOUNTS PAYABLE
20013220	PAYROLL
20013400	ACCOUNTING
20013401	BUDGET MANAGEMENT
20014000	CITY ATTORNEY
20015100	CITY TREASURER
20016100	HUMAN RESOURCES
20023510	HOUSING GRANTS
20023520	NON-HOUSING GRANTS
20100000	WORKER'S COMP FUND
20116220	WORKERS COMPENSATION
20200000	LIABILITY FUND
20216200	RISK MANAGEMENT
20300000	GARAGE FUND
20324100	GARAGE
20324110	FLEET MAINTENANCE
20400000	PURCHASING FUND
20413500	PURCHASING
20413510	CAPITAL ASSET MANAGEMENT
20413520	GRANTS AND SPECIAL PROJECTS
20414000	LEGAL SERVICES/EXPENSES
20500000	BILLING AND COLLECTION FUND
20513300	UTILITY BILLING
20513380	METERING-ELECTRIC
20513382	METERING-WATER
20600000	PUBLIC SAFETY DISPATCH FUND
20620231	POLICE UKIAH DISPATCH
20620232	POLICE FT BRAGG DISPATCH
20700000	PAYROLL POSTING FUND
20800000	BUILDING & MAINTENANCE
20822500	BUILDING & MAINTENANCE
20824300	BLDG MAINT CORP YARD
20900000	IT FUND
20913900	INFORMATION TECHNOLOGY
22000000	FIXED ASSET FUND
25100000	SPECIAL PROJECTS RESERVE FUND
25200000	STREETS/ROW IMPROVEMENT FUND
25224220	STREETS/ROW IMPROVEMENT FUND
25300000	PROP 172 FUND
25321210	CITY FIRE
30000000	PARK DEVELOPMENT FEES FUND
30022200	PARK DEVELOPMENT
30100000	ANTON STADIUM FUND

20012200	ADMINISTRATIVE SUPPORT
30200000	OBSERVATORY PARK FUND
30300000	PLAYGROUND & PARK AMENITIES FU
30322230	PLAYGROUND AND PARK AMENITIES
30400000	SWIMMING POOL FUND
30522250	RIVERSIDE PARK
30600000	SKATE PARK FUND
30700000	SOFTBALL COMPLEX FUND
30800000	OPIOD SETTLEMENT FUND
31100000	ARRC GENERAL OPERATING FUND
31122000	ARRC
31200000	DOWNTOWN BUSINESS IMPROVEMENT
31212600	ECONOMIC DEVELOPMENT
31300000	LMIHF HOUSING ASSET FUND
31323400	HOUSING
31323431	LMI GENERAL ADMIN
31500000	ADVANCED PLANNING FUND
31523100	COMMUNITY PLANNING
31600000	SPECIAL RECREATION EVENTS
31622861	SPECIAL RECREATION EVENTS
50000000	GAS TAX FUND
50024214	TRAFFIC SIGNAL OPERATIONS
50500000	SIGNALIZATION FUND
50800000	SB325 REIMBURSEMENT FUND
50824210	SB325 ENGINEERING
50900000	S.T.P.
50924210	STP ENGINEERING
51100000	RAIL TRAIL FUND
51124210	Rail Trail
60000000	COMM. DEVELOPMT. BLOCK GRANT F
60023411	CDBG GENERAL ADMIN
60023412	CDBG ACTIVITY DELIVERY
61100000	CDBG 16-CDBG-11147
61112600	CDBG ECONOMIC DEVELOPMENT
61123410	16-CDBG-11147
61123411	CDBG GENERAL ADMIN
61200000	FUND 612 UNASSIGNED
61223400	HOME CDD HOUSING
61223422	HOME ACTIVITY DELIVERY
61323400	HOME HOUSING ACTIVITIES
61323421	HOME GENERAL ADMIN
62000000	CASP CERTIF & TRAINING
62023320	CASP CERTIF & TRAINING
63000000	ASSET SEIZURE FUND
63020210	ASSET SEIZURE EXPENDITURE
63300000	H&S EDUCATION 11489(B)(2)(A1)
63320210	H&S ASSET SEIZURE EXPENDITURE
63500000	SUP.LAW ENFORCE.SVC.FD(SLESF)
63520210	SLESF
63600000	CBTHP OFFICER
63620210	CBTHP OFFICER
63800000	ASSET FORFEITURE 11470.2 H&S F
63820210	ASSET FORFEITURE 11470 EXPENDI
63900000	SPECIAL REVENUE POLICE
64000000	PKG. DIST. #1 OPER & MAINT FUN
64012600	ECONOMIC DEVELOPMENT
64020213	POLICE PARKING ENFORCEMENT
67000000	FEDERAL AMERICAN RESCUE FUNDS
69500000	TRANSFER STATION
69624000	SOLID WASTE MITIGATION FUND
70000000	SANITARY DISPOSAL SITE FUND
70024500	LANDFILL 700
70124500	LANDFILL CORRECTIVE
70200000	DISPOSAL CLOSURE RESERVE FUND
70224500	LANDFILL CLOSURE
70400000	POST CLOSURE FUND-SOLID WASTE
71000000	AMBULANCE SERVICES FUND
71021100	AMBULANCE SERVICES
72000000	GOLF FUND
72022400	GOLF
73000000	CONFERENCE CENTER FUND
73022600	CONFERENCE CENTER
77700000	AIRPORT FUND
77714000	CITY ATTORNEY
77725200	AIRPORT OPERATIONS
77800000	AIRPORT CAPITAL IMPROVEMENT FU
77825200	AIRPORT CAPITAL
77900000	SPECIAL AVIATION FUND
77925200	AIRPORT SPECIAL
80000000	ELECTRIC FUND
80014000	CITY ATTORNEY
80026110	ELECTRIC OVERHEAD
80026120	ELECTRIC UNDERGROUND
80026200	TELEMETRY & CALIBRATION
80026210	SUBSTATION
80026220	HYDROELECTRIC PLANT
80026400	ELECTRIC ADMINISTRATION
80026440	POWER PURCHASES
80100000	ELECTRIC CAPITAL RESERVE FUND
80126100	ELECTRIC CIP
80126220	HYDROELECTRIC PLANT
80500000	STREET LIGHTING FUND
80526150	STREET LIGHTING
80600000	PUBLIC BENEFITS CHARGES FUND

63400000	FEDERAL ASSET SEIZURE GRANTS F
63420250	FED ASSET SEIZURE EXPENDITURE
80626450	PUBLIC BENEFITS
80700000	ELECTRIC CAP AND TRADE FUND
80800000	ELECTRIC LOW CARBON FUEL STDS
80826100	ELECTRIC LOW CARBON FUEL STDS
82000000	WATER FUND
82027110	WATER
82027111	PROD OPERATIONS & MAINTENANCE
82027114	DISTRIB OPERATIONS & MAINT
82100000	WATER CAPITAL RESERVE FUND
82200000	WATER CONNECTION FEE FUND
82227113	WATER DISTRIBUTION CAPITAL
83000000	RECYCLED WATER
83027330	RECYCLED WATER
84000000	CITY/DIST. SEWER OPERATING FUN
84027220	WASTE WATER
84027221	CITY WASTE O & M
84027225	WASTE TREATMENT O & M
84100000	SEWER BOND DEBT SERVICE FUND
84127226	WASTEWATER TREATMENT CAPITAL
84200000	RATE STABILIZATION-CITY FUND
84300000	CONNECTION FEE SEWER FUND (CAP
84400000	CITY SEWER CAPITAL PROJECTS FU
84427221	CITY WASTEWATER O&M 844
84427222	CITY WASTE CAPITAL
90000000	SPECIAL DEPOSIT TRUST FUND
91500000	UKIAH VALLEY FIRE DEPARTMENT
91521400	UVFD FIRE ADMINISTRATION
91600000	UVFD PROP 172
91621400	UVFD PROP 172
91700000	UVFD MEASURE B UNASSIGNED
91721400	UVFD FIRE
91800000	UVFD MITIGATION FEES
91821400	UVFD MITIGATION
92000000	MSWMA OPERATIONS
92200000	MILLVIEW COUNTY WATER DISTRICT
92700000	REDWOOD VALLEY WATER DISTRICT
96900000	REDEVELOPMENT OBLIGATION RETIR
96917200	SUCCESSOR AGENCY
96995669	969 - RDA OBLIGATION RETIREMEN

51211	PERS UNFUNDED LIABILITY
51220	INSURANCE
51230	WORKERS COMP
51240	MEDICARE
51260	FICA
51270	UNIFORM ALLOWANCE
51290	CELL PHONE STIPEND
52100	CONTRACTUAL SERVICES
52110	AMBULANCE BILLING
52111	DEFIBRILLATOR MAINTENANCE
52112	M. S. OVERSIGHT
52113	PLANNING STUDIES
52114	COMPLIANCE STUDIES
52130	EDUCATIONAL & MARKETING MATL'S
52131	ASSISTANCE TO SENIORS
52133	MONTHLY DISCOUNT PROGRAM
52134	GENERAL ADMIN
52135	ENERGY CONSERVATION PROGRAM
52137	PUBLIC BENEFITS PROGRAM MGMT
52139	RESEARCH DEVELOPMENT & DEMO
52150	LEGAL SERVICES/EXPENSES
52151	EMPLOYEE BENEFIT ADMIN FEES
52155	ACTIVITY DELIVERY
52180	SECURITY SERVICES
52181	VOLUNTEER EXPENSES
52301	PROPERTY TAX ADMIN FEE
52304	LAFCO FEES AND PROP TAX EXP
52500	TRUSTEE FEES
52510	ADVERTISING & PROMOTION
52515	ADVERTISING & PUBLICATION
52521	LIABILITY INSURANCE PREMIUM
52522	LIABILITY & PROPERTY DEDUCT
52524	PROPERTY INSURANCE PREMIUM
52525	WORKER'S COMP. EXPENSE
52526	REMIF ASSESSMENT PAYMENTS
52527	A.D.P. PREMIUM & DEDUCTIBLE
52528	LIABILITY INSURANCE
52529	EARTHQUAKE & FLOOD (DIC)
52532	SAFETY & TRAINING SUPPORT
52533	UVFA RETIREE HEALTH INS
52600	RENT
52601	DATA STORAGE & CONNECTIVITY
52602	RENTAL OF CITY PROPERTY
52841	SUCCESSOR AGENCY ADMIN
53000	LAWSUIT SETTLEMENT
54100	SUPPLIES
54101	POSTAGE
54102	SMALL TOOLS
54103	LAB SUPPLIES
54106	SPECIALTY SUPPLIES
54107	EMS SUPPLIES
54120	PW - SPECIAL SUPPLIES
54121	PW - ASPHALT CONCRETE
54122	PW - AGGREGATE BASE
54124	PW - CONCRETE/SUPPLIES
54125	PW - TRAFFIC PAINT
54126	PW-PREMARKS
54127	PW - SIGN POSTS/SHEETING
54128	PW - COLD PATCH MATERIAL
54129	PW - TACK OIL
54130	PW - SAFETY
54131	PW - BARRICADES & CONES
54161	BACKGROUND & PHYSICALS
54162	ADVERTISING
54163	INTERVIEW SUPPLIES
54165	NEW EMPLOYEE FINGERPRINT
54166	DOT TESTING PROGRAM
54167	EMPLOYEE DEVELOPMENT
54169	LIVESCAN
54201	PRISONER EXPENSE
54202	MAJOR CRIME INVESTIGATIONS
54203	RECRUITMENT
54320	SOFTWARE
54330	COMPUTER AND TECHNOLOGY
54500	EQUIP RENTS AND LEASES
54700	FINES & PENALTIES
55100	TELEPHONE
55200	PG&E
55210	UTILITIES
56100	VEHICLE & EQUIPMENT MAINT. & R
56112	EQUIPMENT PARTS FOR RESALE
56120	EQUIPMENT MAINTENANCE & REPAIR
56125	LAB EQUIP-REPAIR & MAINT.
56130	EXTERNAL SERVICES
56210	FUEL & FLUIDS
56300	BUILDING MAINT. & REPAIR
56410	EQUIPMENT RENTAL - PRIVATE
56504	FACILITY MAINTENANCE & REPAIR
56600	AIRFIELD MAINTENANCE & REPAIR
57100	LEARNING AND DEVELOPMENT
57101	CONF & TRAINING-AQUATICS
57300	MEMBERSHIPS & SUBSCRIPTIONS

58101 NCPA PLANT GENERATION
58102 NCPA POWER PURCHASES
58103 NCPA TRANSMISSION
58104 NCPA MANAGEMENT SERVICES
58105 NCPA THIRD PARTY SALES
58202 CHEMICALS
58401 AVIATION FUEL
58410 GARAGE LUBRICANTS & PARTS
58510 REIMBURSABLE JOBS
59100 PROPERTY TAXES PAID
59101 FEES
59102 FRANCHISE FEES
59105 CONTRIBUTIONS TO OTHER AGENCY
59106 SENIOR TRASH SUBSIDY
59108 BANK FEES
59400 OTHER EXPENSES
59500 LOANS ISSUED
59502 SCHOLARSHIPS
61200 PURCHASING ALLOCATION
61300 BILLING & COLLECTION ALLOCATIO
61410 RENT ALLOCATION
61420 BUILDING MAINTENANCE ALLOCATIO
61422 IT ALLOCATION
61430 CORP YARD ALLOCATION
61500 INSURANCE ALLOCATION
61600 GARAGE ALLOCATION
61700 DISPATCH
62100 ADMIN & OVERHEAD ALLOCATION
63000 INTERFUND SERVICES USED
70101 LOAN PAYMENTS MADE
70102 BOND INTEREST EXPENSE
70103 LOAN INTEREST
70201 LOAN PRINCIPAL PAYMENTS
70202 BOND PRINCIPAL PAYMENTS
74500 CAPITAL LEASE PRINCIPAL
74501 CAPITAL LEASE INTEREST
80100 MACHINERY & EQUIPMENT
80210 LAND ACQUISITION
80220 BUILDING IMPROVEMENTS
80230 INFRASTRUCTURE
90100 LOAN PROCEEDS
90101 LOAN PAYMENT RECEIVED

List of Checks Presented for Approval on 7/3/2025

The following list of bills payable was reviewed and approved for payment.

MJR

Signature

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
AIR QUALITY MANAGEMENT DISTRICT	2859 FY 24/25	ANNUAL PERMIT FEE	$539.21	*80026220-59101*	*FEES*	*$539.21*
					Vendor Total:	*$539.21*
ALICIA TLELO	0040070 1	REC REFUND: VOLLEYBALL CAMP	$204.00	*10022850-44915*	*RECREATION PROGRAM INCOME*	*$204.00*
					Vendor Total:	*$204.00*
ALLEN JAMES	5/3-5/10/25	INSTRUCTOR	$1,085.00	*10022850-52100*	*CONTRACTUAL SERVICES*	*$1,085.00*
					Vendor Total:	*$1,085.00*
AMAZON CAPITAL SERVICES, INC	1DG3-4LVD-3M3J	LG MONITORS, WEBCAM, PORT CABLE, WIRELESS MOUSE	$797.66	*10023100-54330*	*COMPUTER AND TECHNOLOGY*	*$797.66*
	17YC-9PVN-LH3M	12" MILL SINGLE CUT FILE, 10" MILL SINGLE CUT FILE	$437.70	*10521210-54102*	*SMALL TOOLS*	*$437.70*
	1YXF-HYYL-W6YP	TACTICAL LONG SLEEVE SHIRTS	$84.14	*71021100-54106*	*SPECIALTY SUPPLIES*	*$84.14*
	1RHP-KV6X-C7QM	DISPOSABLE LATEX GLOVES	$170.08	*10020210-54100*	*SUPPLIES*	*$170.08*
	1HXL-NYMJ-4RQW	RETURN: POOL SIGN	($41.36)	*10022300-54100*	*SUPPLIES*	*($41.36)*
	11LR-YKQY-19VF	POOLMASTER SIGNS FOR COMMERCIAL POOLS, CPR SIGNS	$284.32	*10022300-54100*	*SUPPLIES*	*$284.32*
	133G-WJH9-DLPQ	ACRYLIC PAINT PENS, WHITE PAINT PEN	$35.68	*10022810-54100*	*SUPPLIES*	*$35.68*
	1WPL-6PTM-R1R1	HP TONER	$206.76	*20513530-54100*	*SUPPLIES*	*$206.76*
	1C69-4C4P-PKFK	VANDALISM MARK REMOVER	$84.36	*80026120-54100*	*SUPPLIES*	*$84.36*
	19DY-L6J4-9F44	GLASS CLEANER, ABSORBENT WIPES	$419.07	*80026120-54100*	*SUPPLIES*	*$419.07*
	1CCK-PPJY-W1Y4	OFFICEJET PRINTER CABLE, 4 PORT USB	$18.50	*80026400-54100*	*SUPPLIES*	*$18.50*
	1TP9-GGRR-X9K4	POWER STRIPS	$53.76	*80026400-54100*	*SUPPLIES*	*$53.76*
	17FV-KQX3-LXMH	WATER KEY SET, NOTEBOOKS, STICKY NOTES, PENS, MISC	$273.31	*82027114-54100*	*SUPPLIES*	*$136.65*
				84027221-54100	*SUPPLIES*	*$136.66*
	1WYH-GFFL-LYLC	LATEX GLOVES	$338.80	*82027114-54100*	*SUPPLIES*	*$169.40*
				84027221-54100	*SUPPLIES*	*$169.40*

List of Checks Presented for Approval on 7/3/2025

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
AMAZON CAPITAL SERVICES, INC	19KM-HCVF-9479	STREAMLIGHT FLASHLIGHTS, ADJUSTABLE HYDRANT WRENCH	$359.10	*82027114-54100*	*SUPPLIES*	*$179.55*
				84027221-54100	*SUPPLIES*	*$179.55*
					Vendor Total:	*$3,521.88*
ANIXTER	6396555-00	SVC SLEEVES	$92.54	*80000000-12104*	*INVENTORY - PURCHASES*	*$92.54*
	6344701-03	(CO-118) CONN, VISE, BRONZE #5 SOL, 2 STR, FARGO	$376.71	*80000000-12104*	*INVENTORY - PURCHASES*	*$376.71*
	6426011-01	HOT LINE CLAMP, LUBRICANT PULLING CABLE	$1,476.51	*80000000-12104*	*INVENTORY - PURCHASES*	*$1,476.51*
					Vendor Total:	*$1,945.76*
ASBURY ENVIRONMENTAL SERVICES	I500-01228928	DISPOSAL OF MISC. PRODUCTS AS	$8.00	*20324100-52100*	*CONTRACTUAL SERVICES*	*$8.00*
	I500-01229529	DISPOSAL OF MISC. PRODUCTS AS NEEDED	$153.00	*20324100-52100*	*CONTRACTUAL SERVICES*	*$153.00*
					Vendor Total:	*$161.00*
AT&T	000023595281	FIBER INTERNET	$591.80	*20913900-52601*	*DATA STORAGE & CONNECTIVITY*	*$591.80*
	000023614736	FIBER INTERNET	$1,502.62	*20913900-52601*	*DATA STORAGE & CONNECTIVITY*	*$1,502.62*
	000023557001	T1 TO INTERNET FOR DOJ/CLETS	$285.94	*10020210-55100*	*TELEPHONE*	*$142.97*
				20620231-55100	*TELEPHONE*	*$142.97*
	000023409399	T1 TO INTERNET FOR DOJ/CLETS	$286.21	*10020210-55100*	*TELEPHONE*	*$143.11*
				20620231-55100	*TELEPHONE*	*$143.10*
	000023595677	TELEPHONE SERVICES	$4,592.28	*20913900-55100*	*TELEPHONE*	*$4,592.28*
	000023596826	MILLVIEW PHONES/TELEMETRY	$283.20	*92227410-55210*	*UTILITIES*	*$110.20*
				92227420-55210	*UTILITIES*	*$173.00*
					Vendor Total:	*$7,542.05*
BEATRIZ SANCHEZ	0040017	REC REFUND: VOLLEYBALL CAMP	$95.00	*10022850-44915*	*RECREATION PROGRAM INCOME*	*$95.00*
					Vendor Total:	*$95.00*
BENJAMIN KATER	1542-2351	REIMBURSEMENT: REGISTRATION FIRE INSTRUCTOR CLASS	$475.00	*10521210-57100*	*LEARNING AND DEVELOPMENT*	*$475.00*
					Vendor Total:	*$475.00*
BOUND TREE MEDICAL LLC	85798281	PEDIATRIC TRIAGE TAGS	$297.71	*10521210-54107*	*EMS SUPPLIES*	*$297.71*

List of Checks Presented for Approval on 7/3/2025

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
BOUND TREE MEDICAL LLC	85815307	ATROPINE, ALCOHOL PREP PAD, SODIUM CHLORIDE, MISC	$817.56	*10521210-54107*	*EMS SUPPLIES*	*$817.56*
					Vendor Total:	*$1,115.27*
BRIDGES RESTORATION LLC	SI-02243	BIOHARZAD MITIGATION	$557.63	*10020210-52100*	*CONTRACTUAL SERVICES*	*$557.63*
					Vendor Total:	*$557.63*
CAROLLO ENGINEERS INC	FB67761-6	ASSISTANCE WITH SAFER GRANT AP	$10,929.00	*82027110-52100*	*CONTRACTUAL SERVICES*	*$10,929.00*
					Vendor Total:	*$10,929.00*
COFFEE CRITIC INC, THE	R38557	MISC. COFFEE SUPPLIES AS NEEDE	$110.00	*20012200-54100*	*SUPPLIES*	*$110.00*
					Vendor Total:	*$110.00*
COLANTUONO HIGHSMITH & WHATLEY PC	64287	LEGAL SERVICES	$390.00	*84427222-52100*	*CONTRACTUAL SERVICES*	*$390.00*
					Vendor Total:	*$390.00*
COLLEEN HOLLY HUNT	02589	24/25 STORM WATER SUPPORT SERVICES	$4,225.25	*10024224-52100*	*CONTRACTUAL SERVICES*	*$4,225.25*
					Vendor Total:	*$4,225.25*
COTTIE LOUISE MORRISON	4/29-6/7/25	INSTRUCTOR	$161.87	*10022850-52100*	*CONTRACTUAL SERVICES*	*$161.87*
					Vendor Total:	*$161.87*
D WALTER K BARR	9097	DOT PHYSICALS	$150.00	*10022100-54161*	*BACKGROUND & PHYSICALS*	*$150.00*
					Vendor Total:	*$150.00*
DEFATTE EQUIPMENT INC	37980	REGULATOR, SOLENOID-FUEL VALVE	$1,483.28	*20824700-56130*	*EXTERNAL SERVICES*	*$1,483.28*
					Vendor Total:	*$1,483.28*
DEPARTMENT OF JUSTICE	821091	FINGERPRINTING	$370.00	*10020210-54169*	*LIVESCAN*	*$370.00*
	815850	FINGERPRINTING	$32.00	*10521210-52181*	*VOLUNTEER EXPENSES*	*$32.00*
					Vendor Total:	*$402.00*
DONALD KEITH HEWETT	11139	TOWING SERVICES	$412.50	*10020210-54202*	*MAJOR CRIME INVESTIGATIONS*	*$412.50*
					Vendor Total:	*$412.50*
FEDERAL EXPRESS	8-899-36117	SHIPPING SERVICES	$30.63	*10020210-54101*	*POSTAGE*	*$30.63*
					Vendor Total:	*$30.63*
FOREST WAYNE HUNT	3150	TOWING SERVICES	$350.00	*10020210-54202*	*MAJOR CRIME INVESTIGATIONS*	*$350.00*
					Vendor Total:	*$350.00*
GHD INC	380-0071693	PLAN AND SPEC PREP - RAIL TRAIL	$4,837.50	*51124210-80230*	*INFRASTRUCTURE*	*$4,837.50*

List of Checks Presented for Approval on 7/3/2025

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
GHD INC	380-0071745	GROUNDWATER WELL FEASIBILITY A	$16,403.98	*82227115-80230*	*INFRASTRUCTURE*	*$16,403.98*
					Vendor Total:	*$21,241.48*
GRAINGER INC	9532521979	ALTERNATOR SWITCHES, SOLENOID VALVE	$753.97	*84027225-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$753.97*
	9535183033	PIPETTE	$61.07	*84027225-54103*	*LAB SUPPLIES*	*$61.07*
	9518078168	DRYING CLOTHS	$74.11	*71021150-54100*	*SUPPLIES*	*$74.11*
	9521935883	LITHIUM AA BATTERIES	$340.00	*71021150-54100*	*SUPPLIES*	*$340.00*
					Vendor Total:	*$1,229.15*
HACH COMPANY	14475600	NITRIC ACID	$90.80	*84027225-54103*	*LAB SUPPLIES*	*$90.80*
	14531163	DPD FREE REFILL VIAL, SILICONE OIL	$211.35	*84027225-54103*	*LAB SUPPLIES*	*$211.35*
					Vendor Total:	*$302.15*
HERC RENTALS INC	35631398-001	CORE DRILL, DIAMOND CORE BIT	$135.85	*10024620-56410*	*EQUIPMENT RENTAL - PRIVATE*	*$135.85*
					Vendor Total:	*$135.85*
HOME DEPOT CREDIT SERVICES	8284461	USB TR OUTLET, BOX COVER OUTLET, DUPLEX COVER	$46.99	*20824700-56300*	*BUILDING MAINT. & REPAIR*	*$46.99*
	9274655	DRIAN KIT	$15.22	*73022600-56300*	*BUILDING MAINT. & REPAIR*	*$15.22*
	6012745	MISC. PAINT SUPPLIES AS NEEDED	$233.59	*82027111-56300*	*BUILDING MAINT. & REPAIR*	*$233.59*
	4002995	DIY HOSEES, BRASS ADAPTER, MIP/SWT	$85.48	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$85.48*
	8011186	PT GC BROWN HF, FLIP LATCH, LUMBAR	$207.19	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$207.19*
	6020878	COMGRD BALBEAR HANGLE. FJ MLD	$210.56	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$210.56*
	9091814	STRAP, WALL PLATE, GANG BOX, DUPLEX OUTLET, DRILL	$235.82	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$235.82*
	8021539	ROLLER TRAY, ANGLE BRUSH, PLASTIC TUB, SCREWS, PAI	$278.15	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$278.15*
	0010841	DOOR MATT, BRASS NICPPLE, BUSHING, COMPACT ORGANIZ	$280.33	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$280.33*
	7075067	SAFETY GLASS, ROUTEERBITS, KEYLS CHUCK, & MISC	$1,051.86	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$1,051.86*
	8011184	15 PC DRILL BIT SET	$56.52	*82027111-54102*	*SMALL TOOLS*	*$56.52*
	3030558	NAIL EMBED, MED METAL, THICK METAL, CONTEMPO KNOB	$58.08	*10022840-54100*	*SUPPLIES*	*$58.08*
	6031341	LOW VOLTAGE OLD WORK 1G HDMI PORT	$5.71	*10521210-54100*	*SUPPLIES*	*$5.71*

List of Checks Presented for Approval on 7/3/2025

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
HOME DEPOT CREDIT SERVICES	0013584	SCREW EYE BLACK, VYNYL, OUTLET, RING TERMINAL	$57.00	*10521210-54100*	*SUPPLIES*	*$57.00*
	9013697	JOINT COMPOUND, SANDING SPOUNG	$71.06	*10521210-54100*	*SUPPLIES*	*$71.06*
	5012912	MOONSTONE	$259.45	*10621600-54100*	*SUPPLIES*	*$259.45*
	6031382	FJ PR FLUSH HBD, MDF, MOULDING	$634.74	*10621600-54100*	*SUPPLIES*	*$634.74*
	8012511	MOONSTONE	$1,245.36	*10621600-54100*	*SUPPLIES*	*$1,245.36*
	1284243	AAA BATTERIES, FG NITRILE COATED WG	$60.65	*20824700-54100*	*SUPPLIES*	*$60.65*
	6281868	LANDSCAPE WIRE, INGROUND WELL, WATT TRANSFORMER	$198.09	*80026400-54100*	*SUPPLIES*	*$198.09*
	7012586	POCKET KNIFE, FOLDING SHARPENER, SUPER GLUE, BRUSH	$51.39	*82027111-54100*	*SUPPLIES*	*$51.39*
	4011674	CHAIN WHITE, SPRG LK	$38.30	*83027330-54100*	*SUPPLIES*	*$38.30*
					Vendor Total:	*$5,381.54*
IRVINE & JACHENS INC	4991	BUCKLES	$3,063.50	*71021100-54106*	*SPECIALTY SUPPLIES*	*$3,063.50*
					Vendor Total:	*$3,063.50*
JACINTO WALTERS AUTOMOTIVE LLC	0003312	STEERING RACK CALIBRATION	$165.00	*10020210-56130*	*EXTERNAL SERVICES*	*$165.00*
					Vendor Total:	*$165.00*
JAMES THOMSEN	BA FY 24/25	BOOT ALLOWANCE	$177.98	*10022100-54100*	*SUPPLIES*	*$177.98*
					Vendor Total:	*$177.98*
JASON BLACK	BA FY 24/25	BOOT ALLOWANCE: STATION BOOTS	$420.62	*10521210-54106*	*SPECIALTY SUPPLIES*	*$420.62*
					Vendor Total:	*$420.62*
JOE FOWLER	BA FY 24/25 1	BOOT ALLOWANCE	$185.08	*10022100-54100*	*SUPPLIES*	*$185.08*
					Vendor Total:	*$185.08*
JOHN'S DAIRY EQUIPMENT & SUPPLY CO INC	SAL4588	SIERRA SANI-CHLOR 15 GAL DRUM	$1,480.77	*82000000-10305*	*PRE-PAID OTHER EXPENSES*	*$1,480.77*
					Vendor Total:	*$1,480.77*
KACIE MCGEHEE	0039017	REC REFUND: SWIM LESSONS CANCELLED	$119.00	*10022850-44915*	*RECREATION PROGRAM INCOME*	*$119.00*
					Vendor Total:	*$119.00*
KAREN LEE	4/29-6/7/25	INSTRUCTOR	$356.13	*10022850-52100*	*CONTRACTUAL SERVICES*	*$356.13*
					Vendor Total:	*$356.13*
LAUREN KAIN	0039318	REC REFUND: SWIM LESSONS	$70.00	*10022850-44915*	*RECREATION PROGRAM INCOME*	*$70.00*
					Vendor Total:	*$70.00*

List of Checks Presented for Approval on 7/3/2025

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
LAWRENCE & ASSOCIATES	30785	2425 LANDFALL GAS EXTRACTION S	$1,141.25	*70024500-52100*	*CONTRACTUAL SERVICES*	*$1,141.25*
					Vendor Total:	*$1,141.25*
MAJOR CRIMES TASK FORCE	JUNE 3, 2025	AGENCIES ANNUAL CONTRIBUTION	$4,500.00	*10020224-52100*	*CONTRACTUAL SERVICES*	*$4,500.00*
					Vendor Total:	*$4,500.00*
MARK CLEMENTI PHD	06-01-25PD	PRE-EMPLOYMENT PSYCHOLOGICAL EVALUATION	$1,688.00	*10020210-54161*	*BACKGROUND & PHYSICALS*	*$1,688.00*
					Vendor Total:	*$1,688.00*
MELINDA WALLS	FY 25/26	BEACON RIGHT OF WAY AGREEMENT	$5,054.74	*77725200-52100*	*CONTRACTUAL SERVICES*	*$5,054.74*
					Vendor Total:	*$5,054.74*
MES - MUNICIPAL EMERGENCY SERVICES INC	IN2264934	FUELS CREW SUPPLIES	$1,683.46	*10621600-54102*	*SMALL TOOLS*	*$1,522.99*
				10621600-54106	*SPECIALTY SUPPLIES*	*$160.47*
	IN2265897	FUELS CREW SUPPLIES	$3,412.47	*10621600-54102*	*SMALL TOOLS*	*$1,816.83*
				10621600-54106	*SPECIALTY SUPPLIES*	*$1,595.64*
					Vendor Total:	*$5,095.93*
MOTION INDUSTRIES INC	CA23-00552499	BEARING, FITTINGS & MISC. ITEM	$621.96	*82027111-56300*	*BUILDING MAINT. & REPAIR*	*$621.96*
					Vendor Total:	*$621.96*
NICK BARBIERI TRUCKING LLC	1214229-IN	4,000 RED DIESEL FUEL. START @ 300 PLANT ROAD THEN	$15,033.18	*82027111-56210*	*FUEL & FLUIDS*	*$1,799.25*
				84027225-56210	*FUEL & FLUIDS*	*$13,233.93*
					Vendor Total:	*$15,033.18*
NOR-CAL RECYCLED ROCK & AGGREGATES INC	28930	2X2X6 STAMPED BLOCKS	$992.45	*10521210-56300*	*BUILDING MAINT. & REPAIR*	*$992.45*
	28849	MISC ROCK & ROAD PATCH MATERIAL	$412.77	*82027114-54100*	*SUPPLIES*	*$206.38*
				84027221-54100	*SUPPLIES*	*$206.39*
	28984	MISC ROCK & ROAD PATCH MATERIAL	$957.20	*82027114-54100*	*SUPPLIES*	*$478.60*
				84027221-54100	*SUPPLIES*	*$478.60*
					Vendor Total:	*$2,362.42*
PACE SUPPLY CORPORATION	0210570824	6 CI/PL COUPLING FERNCO	$23.52	*20824700-56300*	*BUILDING MAINT. & REPAIR*	*$23.52*
	0210564843	AMRAD MULTI-CAP ACITOR UP TO 67.5 MFD	$305.67	*73022600-56300*	*BUILDING MAINT. & REPAIR*	*$305.67*
					Vendor Total:	*$329.19*

List of Checks Presented for Approval on 7/3/2025

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Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
PAYTON MANTOOTH	TA 6/16-27/25	TRAVEL ADVANCE	$207.00	*10020210-57100*	*LEARNING AND DEVELOPMENT*	*$207.00*
					Vendor Total:	*$207.00*
PHILIP ANDREW WILLIAMS	175	WATER RIGHTS LEGAL COUNSEL	$9,052.50	*82027110-52150*	*LEGAL SERVICES/ EXPENSES*	*$9,052.50*
	176	WATER RIGHTS LEGAL COUNSEL	$15,250.00	*82027110-52150*	*LEGAL SERVICES/ EXPENSES*	*$15,250.00*
					Vendor Total:	*$24,302.50*
PLAZA PAINT INC	NNAN3	PAINT SUPPLIES	$357.83	*10022700-54100*	*SUPPLIES*	*$357.83*
					Vendor Total:	*$357.83*
RAINBOW AGRICULTURAL SERVICES	79382/H	BULK FUEL	$116.19	*92727510-56210*	*FUEL & FLUIDS*	*$116.19*
					Vendor Total:	*$116.19*
RAY C STARKEY	P-2500494	EMBROIDERY SERVICES	$122.50	*80026120-54100*	*SUPPLIES*	*$122.50*
					Vendor Total:	*$122.50*
RINEHART OIL INC	CL47187	FUEL CARD CHARGES AS NEEDED	$1,830.59	*92227410-56210*	*FUEL & FLUIDS*	*$512.57*
				92727520-56210	*FUEL & FLUIDS*	*$512.56*
				93227600-56210	*FUEL & FLUIDS*	*$805.46*
					Vendor Total:	*$1,830.59*
RYAN MATTHEW JACKSON	062725	IT SUPPORT SERVICES	$3,625.00	*20913900-52100*	*CONTRACTUAL SERVICES*	*$3,625.00*
					Vendor Total:	*$3,625.00*
SCOTT NORCROSS	BA FY 24/25	BOOT ALLOWANCE	$280.89	*82027111-54100*	*SUPPLIES*	*$280.89*
					Vendor Total:	*$280.89*
SCOTT SHAVER	TR 4/7-11/25	TRAVEL REIMBURSEMENT	$690.20	*20913920-51291*	*MISC EMPLOYMENT COSTS*	*$690.20*
					Vendor Total:	*$690.20*
SHANE BAARTS	TA 6/16-27/25	TRAVEL ADVANCE	$207.00	*10020210-57100*	*LEARNING AND DEVELOPMENT*	*$207.00*
					Vendor Total:	*$207.00*
SHIRLEY JOHNSON	270-AHIFT2025002701	REFUND: OVER PAYMENT AMBULANCE BILLING	$242.89	*71000000-10415*	*ACCRUED REVENUE*	*$242.89*
					Vendor Total:	*$242.89*
SOLID WASTES SYSTEMS INC	5113	MISC. DUMP FEES	$410.37	*10521210-56300*	*BUILDING MAINT. & REPAIR*	*$16.25*
				10521210-56300	*BUILDING MAINT. & REPAIR*	*$26.00*
				10521210-56300	*BUILDING MAINT. & REPAIR*	*$26.00*

List of Checks Presented for Approval on 7/3/2025

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
SOLID WASTES SYSTEMS INC	5113	MISC. DUMP FEES	$410.37	*20824700-56300*	*BUILDING MAINT. & REPAIR*	*$26.00*
				20824700-56300	*BUILDING MAINT. & REPAIR*	*$26.00*
				20824700-56300	*BUILDING MAINT. & REPAIR*	*$58.84*
				20824700-56300	*BUILDING MAINT. & REPAIR*	*$154.98*
				69624621-52170	*UKIAH WASTE SOLUTIONS*	*$15.23*
				69624621-52170	*UKIAH WASTE SOLUTIONS*	*$16.25*
				69624621-52170	*UKIAH WASTE SOLUTIONS*	*$17.55*
				69624621-52170	*UKIAH WASTE SOLUTIONS*	*$27.27*
					Vendor Total:	*$410.37*
STATE CONTROLLER'S OFFICE	FTB-00008149	FTB OFFSETS: FTB, SCO SARD, SCO ADMIN	$76.76	*64020213-54100*	*SUPPLIES*	*$76.76*
					Vendor Total:	*$76.76*
SUSAN JANSSEN	JUNE 26, 2025	BILLINGUAL TESTING	$300.00	*20016100-54161*	*BACKGROUND & PHYSICALS*	*$300.00*
					Vendor Total:	*$300.00*
THE SHERWIN-WILLIAMS CO INC	1742-1	PAINT SUPPLIES	$2,875.39	*10024620-54100*	*SUPPLIES*	*$2,875.39*
					Vendor Total:	*$2,875.39*
TRITECH SOFTWARE SYSTEMS	439106	CENTRALSQUARE MAINTENANCE RENEWAL	$31,175.38	*10020210-54320*	*SOFTWARE*	*$15,306.54*
				20620231-54320	*SOFTWARE*	*$15,868.84*
					Vendor Total:	*$31,175.38*
TUFTS POLYGRAPH & INVESTIGATION	2025-1058(A)	POLYGRAPH & INVESTIGATION SERVICES	$1,250.00	*10020210-54161*	*BACKGROUND & PHYSICALS*	*$1,250.00*
	2025-1062(A)	POLYGRAPH & INVESTIGATION SERVICES	$1,250.00	*10020210-54161*	*BACKGROUND & PHYSICALS*	*$1,250.00*
	2025-1064(A)	POLYGRAPH & INVESTIGATION SERVICES	$1,250.00	*71021150-54161*	*BACKGROUND & PHYSICALS*	*$1,250.00*
					Vendor Total:	*$3,750.00*
UKIAH DAILY JOURNAL	0006897315	PUBLISHING SERVICES	$209.40	*10023100-52515*	*ADVERTISING & PUBLICATION*	*$209.40*
	0006894713	PUBLISHING SERVICES	$301.56	*10023100-52515*	*ADVERTISING & PUBLICATION*	*$301.56*
	0006894811	PUBLISHING SERVICES	$467.11	*20012200-52304*	*LAFCO FEES AND PROP TAX EXP*	*$467.11*
	0006896201	PUBLISHING SERVICES	$457.09	*20012500-52150*	*LEGAL SERVICES/ EXPENSES*	*$457.09*
					Vendor Total:	*$1,435.16*

List of Checks Presented for Approval on 7/3/2025

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
UKIAH WASTE SOLUTIONS, INC	176876417U034	BIOSOLID REMOVAL	$12,832.42	*84027225-52100*	*CONTRACTUAL SERVICES*	*$12,832.42*
					Vendor Total:	*$12,832.42*
UNITED SITE SERVICES	114-14076734	PORTABLE TOILET RENTAL CONTRACT	$873.41	*90000000-23226*	*CONCERT SERIES*	*$873.41*
					Vendor Total:	*$873.41*
VERIZON WIRELESS	6116455708	DATA & EMERGENCY LOANER PHONES	$698.18	*10022300-55100*	*TELEPHONE*	*$38.01*
				10022810-55100	*TELEPHONE*	*$78.02*
				10022840-55100	*TELEPHONE*	*$38.01*
				10024210-55100	*TELEPHONE*	*$19.01*
				10024620-55100	*TELEPHONE*	*$9.50*
				70024500-55100	*TELEPHONE*	*$9.50*
				77725200-55100	*TELEPHONE*	*$80.02*
				80026210-55100	*TELEPHONE*	*$38.01*
				80026400-55100	*TELEPHONE*	*$312.09*
				82027110-55100	*TELEPHONE*	*$41.17*
				84027221-55100	*TELEPHONE*	*$17.42*
				84027225-55100	*TELEPHONE*	*$17.42*
					Vendor Total:	*$698.18*
WEST YOST ASSOCIATES INC	2063483	RUSSIAN RIVER WATERSHED AGREEM	$52,798.11	*91190100-52100*	*CONTRACTUAL SERVICES*	*$52,798.11*
					Vendor Total:	*$52,798.11*
WESTERN RENEWABLE ENERGY GENERATION	WR51833	WREGIS CERTIFICATION RETIRED VOLUME FEE	$5.12	*80026400-52100*	*CONTRACTUAL SERVICES*	*$5.12*
					Vendor Total:	*$5.12*
WYATT IRRIGATION CO	339164 01	PVC 90 ELL SOC SCH80	$20.40	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$20.40*
	550858 01	MC-18E 18 STAT CTRL ENHANCE OD	$1,452.96	*10022100-54100*	*SUPPLIES*	*$1,452.96*
					Vendor Total:	*$1,473.36*
ZOEY WHITE	6/24-26/25	INSTRUCTOR	$4,267.29	*10022850-52100*	*CONTRACTUAL SERVICES*	*$4,267.29*
					Vendor Total:	*$4,267.29*
					INVOICE TOTAL:	***$250,994.79***

List of Checks Presented for Approval on 7/11/2025

The following list of bills payable was reviewed and approved for payment.

MJR

Signature

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
295 GROUP LLC	6.20.25	POLICE AWARDS DINNER	$2,994.00	*63820210-54100*	*SUPPLIES*	*$2,994.00*
					Vendor Total:	*$2,994.00*
AC&R SERVICES INC	M25000070	REFUND ON INVALID PERMIT: OUTSIDE CITY LIMITS	$185.16	*10023300-42210*	*BUILDING PERMITS*	*$4.51*
				90000000-23027	*BUILDING STDS ADMIN SPEC FD*	*$1.00*
				31523100-44152	*GENERAL PLAN AMEND.*	*$22.53*
				10023300-42240	*MECHANICAL PERMITS*	*$150.20*
				90000000-23005	*STRONG MOTION INSTR. PROG.*	*$0.91*
				10023300-42211	*TRAIN & CERTIFICATION SURCHRG*	*$6.01*
					Vendor Total:	*$185.16*
ALL-GUARD ALARM SYSTEMS INC	A488653	MONTHLY MONITORING WWTP	$93.44	*84027225-52100*	*CONTRACTUAL SERVICES*	*$93.44*
					Vendor Total:	*$93.44*
AMAZON CAPITAL SERVICES, INC	1MDV-4KJG-CRKR	LG 49" CURVED MONITOR	$985.86	*20013400-54330*	*COMPUTER AND TECHNOLOGY*	*$985.86*
	1NV4-VTRP-LHJH	FLEXIBLE RUBBER DRAW LATCH, T-HANDLE DRAW LATCHES	$20.09	*10022100-56130*	*EXTERNAL SERVICES*	*$20.09*
	1PCH-6JHT-KKR1	DIAL CALIPER	$255.86	*82027111-54102*	*SMALL TOOLS*	*$255.86*
	17VJ-WVKF-WK66	FABRIC PAINT	$30.47	*90000000-23256*	*SPECIAL EVENTS TRUST*	*$30.47*
	1KKF-QHVX-WMYD	THE WILD ROBOT BLU-RAY, MOANA 2 BLU-RAY	$48.92	*90000000-23256*	*SPECIAL EVENTS TRUST*	*$48.92*
	1HVL-CDD4-QPKQ	TUG ROPE PET TOYS	$76.16	*90000000-23256*	*SPECIAL EVENTS TRUST*	*$76.16*
	1HDY-VLFM-3NXY	BACKYARD GOLF BUCKET GAME	$81.65	*90000000-23256*	*SPECIAL EVENTS TRUST*	*$81.65*
	1G3H-79X1-M7FP	EMBROIDERED PATCHES, MODELING CLAY, MISC	$357.14	*90000000-23256*	*SPECIAL EVENTS TRUST*	*$357.14*
	1VXX-CTD4-961W	DISPOSABLE GLOVES	$51.93	*10020210-54100*	*SUPPLIES*	*$51.93*
	14MH-XCDY-NNWX	AQUATICS SUPPLIES	$892.50	*10022300-54100*	*SUPPLIES*	*$892.50*
	1WFV-RV67-RCX7	TACHIKARA VOLLEY-LITE ADDITIONAL COLORS	$582.95	*10022850-54100*	*SUPPLIES*	*$582.95*

List of Checks Presented for Approval on 7/11/2025

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
AMAZON CAPITAL SERVICES, INC	1WNN-9FW9-Q4CH	DESK CHAIR	$97.98	*10023100-54100*	*SUPPLIES*	*$97.98*
	1H1W-7Q6N-LVMN	BANKERS BOX	$158.40	*10023100-54100*	*SUPPLIES*	*$158.40*
	1H91-RMQ4-TM63	OFFICE STAPLES	$3.63	*10023700-54100*	*SUPPLIES*	*$3.63*
	1YXF-HYYL-WCFV	HEAVY DUTY OIL ABSORBENT PADS	$155.00	*10024620-54100*	*SUPPLIES*	*$155.00*
	146X-3JHC-VXKJ	CALIFORNIA STATE INDOOR FLAG SET	$598.80	*20012200-54100*	*SUPPLIES*	*$598.80*
	119H-KPTV-N7C3	SAMSUN CURVED MONITORS	$1,753.98	*82027111-54100*	*SUPPLIES*	*$1,753.98*
	1RXK-C3FV-GGQC	8" RUBBER GASKETS	$115.85	*84027225-54100*	*SUPPLIES*	*$115.85*
					Vendor Total:	*$6,267.17*
AMWINS GROUP BENEFITS INC	9012198	JULY 25 RETIREE HEALTH INSURANCE	$3,898.74	*20700000-20524*	*NON-EMPLOYEE HEALTH INS.PREM*	*$3,898.74*
					Vendor Total:	*$3,898.74*
ANNETTE MAKINO	0038305	DEPOSIT REFUND: GHM	$250.00	*10022700-46530*	*MUSEUM MEETING RENTALS*	*$250.00*
					Vendor Total:	*$250.00*
ASBURY ENVIRONMENTAL SERVICES	I500-01230884	DISPOSAL OF MISC. PRODUCTS AS NEEDED	$103.00	*20324100-52100*	*CONTRACTUAL SERVICES*	*$103.00*
					Vendor Total:	*$103.00*
AT&T	2799 JUL 25	INTERNET	$124.86	*10022100-55100*	*TELEPHONE*	*$124.86*
	3138 JUN 25	DSL FOR 911 REMOTE SUPPORT	$251.45	*20620231-55100*	*TELEPHONE*	*$251.45*
					Vendor Total:	*$376.31*
BKF ENGINEERS	25060876	EAST PERKINS WIDENING PROJECT/	$280.00	*25224220-80230*	*INFRASTRUCTURE*	*$280.00*
					Vendor Total:	*$280.00*
BONNIE LORENZI	1/13/25	REIMBURSEMENT: SURVEY WORK FOR CITY	$375.00	*10024210-52100*	*CONTRACTUAL SERVICES*	*$375.00*
					Vendor Total:	*$375.00*
CAROLLO ENGINEERS INC	FB67792	DESIGN PHASES I&II RECYCLED WA	$94,332.50	*83027330-80230*	*INFRASTRUCTURE*	*$94,332.50*
					Vendor Total:	*$94,332.50*
CAROLYN WELCH	0038675	SECURITY DEPOSIT: GRACE HUDSON MUSEUM	$250.00	*10022700-46530*	*MUSEUM MEETING RENTALS*	*$250.00*
					Vendor Total:	*$250.00*
CARTER GRISSOM	JUL 13	PROMOTER FOR 2025 SUNDAYS IN THE PARK	$500.00	*90000000-23226*	*CONCERT SERIES*	*$500.00*
					Vendor Total:	*$500.00*

List of Checks Presented for Approval on 7/11/2025

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Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
COFFEE CRITIC INC, THE	R38848	MISC. COFFEE SUPPLIES AS NEEDE	$170.00	*73022601-54109*	*CATERING INVENTORY & SERVICES*	*$170.00*
					Vendor Total:	*$170.00*
COMPUTER OPTIONS INC	INV08270	SECURITY REVIEW	$4,750.00	*20913900-54100*	*SUPPLIES*	*$4,750.00*
					Vendor Total:	*$4,750.00*
COPQUEST INC	C25768439	POLICE PATCHES	$453.41	*10020210-54100*	*SUPPLIES*	*$453.41*
					Vendor Total:	*$453.41*
DAVID RAPPORT	7755	LEGAL SERVICES FOR FY 24/25	$32,378.84	*10014000-52150*	*LEGAL SERVICES/ EXPENSES*	*$1,432.16*
				10514000-52150	*LEGAL SERVICES/ EXPENSES*	*$199.91*
				20014000-52150	*LEGAL SERVICES/ EXPENSES*	*$21,190.06*
				77714000-52150	*LEGAL SERVICES/ EXPENSES*	*$1,303.87*
				80014000-52150	*LEGAL SERVICES/ EXPENSES*	*$984.61*
				82014000-52150	*LEGAL SERVICES/ EXPENSES*	*$128.30*
				84014000-52150	*LEGAL SERVICES/ EXPENSES*	*$7,139.93*
					Vendor Total:	*$32,378.84*
DC CUSTOMS INC	202008	RIGID LIGHT DRIVING FOG LIGHTS, LED	$1,251.31	*10521210-56130*	*EXTERNAL SERVICES*	*$1,251.31*
	201976	ARE SHELL REMOVAL 24 F-250	$140.00	*20324100-58410*	*GARAGE LUBRICANTS & PARTS*	*$140.00*
					Vendor Total:	*$1,391.31*
DEFATTE EQUIPMENT INC	37953	4WD RIDE ON TRENCHER	$1,034.31	*84027225-56410*	*EQUIPMENT RENTAL - PRIVATE*	*$1,034.31*
					Vendor Total:	*$1,034.31*
DONALD KEITH HEWETT	106175	TOWING SERVICES	$375.00	*10020210-54202*	*MAJOR CRIME INVESTIGATIONS*	*$375.00*
					Vendor Total:	*$375.00*
DONALD PHILLIPS HILL JR	JUL 25	PARKS DEPT. OFFICE LEASE - 185	$1,537.00	*10022100-52600*	*RENT*	*$1,537.00*
					Vendor Total:	*$1,537.00*
ENERGEA REDWOOD LLC	18	RVCWD ELECTRIC POWER GENERATIO	$1,637.76	*92727510-59101*	*FEES*	*$1,637.76*
					Vendor Total:	*$1,637.76*
EUREKA OXYGEN CO	482660	FUEL FIRE SERVICE	$73.00	*20824700-56300*	*BUILDING MAINT. & REPAIR*	*$73.00*

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Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
EUREKA OXYGEN CO	482731	FIRE EXTINGUISHERS, BRACKETS	$1,378.54	*20324100-56112*	*EQUIPMENT PARTS FOR RESALE*	*$1,378.54*
					Vendor Total:	*$1,451.54*
FASTENAL	CAROH89925	SS BOLT RACKS	$104.89	*84027225-56300*	*BUILDING MAINT. & REPAIR*	*$104.89*
					Vendor Total:	*$104.89*
FEDERAL EXPRESS	8-914-65841	SHIPPING SERVICES	$204.92	*10020210-54101*	*POSTAGE*	*$66.05*
				20012500-54101	*POSTAGE*	*$107.67*
				20413500-54101	*POSTAGE*	*$31.20*
					Vendor Total:	*$204.92*
FLEETPRIDE	126636838	CLEAR LAMP, PIGTAIL	$245.72	*10024620-56130*	*EXTERNAL SERVICES*	*$245.72*
					Vendor Total:	*$245.72*
GAYNOR TELESYSTEMS INC	SWA2897	SOFTWARE ASSURANCE	$1,393.70	*20913910-54320*	*SOFTWARE*	*$1,393.70*
					Vendor Total:	*$1,393.70*
GEORGINA FETH-MICHEL	LAPTOP	REIMBURSEMENT: RETURN OF LAPTOP	$60.88	*20013400-54101*	*POSTAGE*	*$60.88*
					Vendor Total:	*$60.88*
GHILOTTI CONSTRUCTION COMPANY INC	6095*15	URBAN CORE REHAB AND TRANSPORT	$1,674,486.44	*25224220-80230*	*INFRASTRUCTURE!*	*$515,100.27*
				50024220-80230	*INFRASTRUCTURE!*	*$677,713.40*
				82127113-80230	*INFRASTRUCTURE!*	*$480,238.56*
				84427221-80230	*INFRASTRUCTURE*	*$1,434.21*
					Vendor Total:	*$1,674,486.44*
GINA GRECO	6/12/25	INSTRUCTOR	$91.00	*10022850-52100*	*CONTRACTUAL SERVICES*	*$91.00*
					Vendor Total:	*$91.00*
GOLDEN GATE BRIDGE TOLL	T712586432499	BRIDGE TOLL FEES	$26.00	*71021150-56130*	*EXTERNAL SERVICES*	*$26.00*
	I712528037257	BRIDGE TOLL FEES	$8.00	*10022700-57100*	*LEARNING AND DEVELOPMENT*	*$8.00*
					Vendor Total:	*$34.00*
GOLDEN STATE RISK	INV-004470	UVFD WORKER COMP, LIABILITY, PROPERTY INSURANCE	$21,562.13	*10521210-52521*	*LIABILITY INSURANCE PREMIUM*	*$18,500.00*
				10521210-52181	*VOLUNTEER EXPENSES*	*$3,062.13*
					Vendor Total:	*$21,562.13*
GOVERNMENT-JOBS.COM INC	INV-138309	ATTRACT SUBSCRIPTION	$7,259.25	*20016100-54320*	*SOFTWARE*	*$7,259.25*
					Vendor Total:	*$7,259.25*

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Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
GRAINGER INC	9528300396	ICED TEA FILTERS	$135.73	*71021150-54100*	*SUPPLIES*	*$135.73*
	9542979225	REBUILD KIT	$214.54	*82027111-54100*	*SUPPLIES*	*$214.54*
					Vendor Total:	*$350.27*
HAPPY CYCLING LLC	64156	INTERNET SERVICES	$115.00	*92727510-52100*	*CONTRACTUAL SERVICES*	*$115.00*
					Vendor Total:	*$115.00*
HD SUPPLY INC	INV00737318	HACH COLOR FILTER MODULE FOR EPA COMPLIANCE	$685.92	*92727510-54100*	*SUPPLIES*	*$685.92*
					Vendor Total:	*$685.92*
HILDEBRAND CONSULTING LLC	714	2025 SEWER RATE FINANCIAL PLAN	$4,000.00	*84427221-52100*	*CONTRACTUAL SERVICES*	*$4,000.00*
	731	2025 SEWER RATE FINANCIAL PLAN	$5,250.00	*84427221-52100*	*CONTRACTUAL SERVICES*	*$5,250.00*
					Vendor Total:	*$9,250.00*
HOME DEPOT CREDIT SERVICES	1012148	NIPPLE, ELBOW, MIP ADAPTER BRASS	$31.24	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$31.24*
	74459	BALL VALVE, ELBOW, MIP ADAPTER POLY	$140.50	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$140.50*
	7281744	LOW VOLTAGE BLACK LED INGROUND WELL	$38.07	*80026400-54100*	*SUPPLIES*	*$38.07*
	8031577	GALV STEEL FLAT SHEETS, DOUBLE SIDED TAPE, KWIK SE	$62.71	*80026400-54100*	*SUPPLIES*	*$62.71*
	5072964	KINGSFORD MATCH LIGHT	$27.14	*82027111-54100*	*SUPPLIES*	*$27.14*
					Vendor Total:	*$299.66*
INFOSEND INC	288225	UB PRINT & MAIL SERVICES	$5,293.26	*20513300-52100*	*CONTRACTUAL SERVICES*	*$5,293.26*
					Vendor Total:	*$5,293.26*
JAMES C CARLSON	P-758	SEWER LATERAL: REIMBURSEMENT	$2,000.00	*84427221-59501*	*GRANTS ISSUED*	*$2,000.00*
					Vendor Total:	*$2,000.00*
JANET ROSEN	0039561	PARK REFUND: CANCELLATION TODD GROVE BBQ AREA	$150.00	*10022100-46360*	*PARKS RENTAL*	*$150.00*
					Vendor Total:	*$150.00*
JOAQUIN WILLIAM MCWHINNEY	JUL 13	BIG MOUNTAIN 2025 SITP	$2,075.00	*90000000-23226*	*CONCERT SERIES*	*$2,075.00*
					Vendor Total:	*$2,075.00*
JOHNSONS CUSTOM LANDSCAPING INC	16808	LANDSCAPE MAINTENANCE: SUBSTA	$665.00	*80026210-52100*	*CONTRACTUAL SERVICES*	*$665.00*
	16827	LANDSCAPE MAINTENANCE: SUBSTA	$350.00	*80026400-52100*	*CONTRACTUAL SERVICES*	*$350.00*
					Vendor Total:	*$1,015.00*

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Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
KAREN POPLAWSKI	6/3-25/25	INSTRUCTOR	$210.00	*10022850-52100*	*CONTRACTUAL SERVICES*	*$210.00*
					Vendor Total:	*$210.00*
KEVIN PIERACHINI	BA FY 24/25	BOOT ALLOWANCE	$174.15	*20824300-54100*	*SUPPLIES*	*$174.15*
					Vendor Total:	*$174.15*
KIRBY CONSTRUCTION COMPANY INC	250300	SPEC 24-01 HASTINGS TENANT IMP	$16,195.03	*80126100-80220*	*BUILDING IMPROVEMENTS*	*$16,195.03*
					Vendor Total:	*$16,195.03*
LACO ASSOCIATES	54052	RVCWD: DWR GRANT PROJECT MANAGEMENT	$7,732.50	*92727500-52100*	*CONTRACTUAL SERVICES*	*$7,732.50*
					Vendor Total:	*$7,732.50*
LAURENCE THOMPSON	JUL 13	2025 SUNDAYS IN THE PARK AUDIO	$2,400.00	*90000000-23226*	*CONCERT SERIES*	*$2,400.00*
					Vendor Total:	*$2,400.00*
LAWRENCE & ASSOCIATES	30829	2425 LANDFALL GAS EXTRACTION S	$612.50	*70024500-52100*	*CONTRACTUAL SERVICES*	*$612.50*
					Vendor Total:	*$612.50*
LEAGUE OF CALIFORNIA CITIES	1837	REDWOOD EMPIRE DIVISION MEETING	$280.00	*20010000-57100*	*LEARNING AND DEVELOPMENT*	*$280.00*
					Vendor Total:	*$280.00*
LEXIPOL LLC	INVLEX11253791	ANNUAL FIRE PROCEDURES, MANUALS	$1,138.12	*71021100-52100*	*CONTRACTUAL SERVICES*	*$569.06*
				71021150-52100	*CONTRACTUAL SERVICES*	*$569.06*
					Vendor Total:	*$1,138.12*
LIEBERT CASSIDY WHITMORE	292823	LEGAL SERVICES PERTAINING TO E	$580.00	*20016100-52150*	*LEGAL SERVICES/ EXPENSES*	*$580.00*
					Vendor Total:	*$580.00*
LIFE ASSIST INC	1611263	MISC. EMS SUPPLIES AS NEEDED	$622.77	*10521210-54107*	*EMS SUPPLIES*	*$622.77*
	1609876	MISC. EMS SUPPLIES AS NEEDED	$596.29	*10621600-54100*	*SUPPLIES*	*$596.29*
					Vendor Total:	*$1,219.06*
LORELEI SCOTT	13950	HASTINGS BUILDING IMPROVEMENTS	$1,019.14	*80126100-80220*	*BUILDING IMPROVEMENTS*	*$1,019.14*
					Vendor Total:	*$1,019.14*
MARCUS FREEMAN	BA FY 25/26	BOOT ALLOWANCE	$300.00	*82027111-54100*	*SUPPLIES*	*$300.00*
					Vendor Total:	*$300.00*
MARK HILLIKER	APR-JUN 25	QUARTERLY PLANNING COMMISSION	$300.00	*20010010-51121*	*PLANNING COMMISSION STIPENDS*	*$300.00*

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Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
MARK HILLIKER	JAN-MAR 25	QUARTERLY PLANNING COMMISSION STIPEND	$300.00	*20010010-51121*	*PLANNING COMMISSION STIPENDS*	*$300.00*
					Vendor Total:	*$600.00*
MARY HORGER	TR 5/10-14/25	TRAVEL REIMBURSEMENT	$449.20	*20513530-57100*	*LEARNING AND DEVELOPMENT*	*$449.20*
					Vendor Total:	*$449.20*
MATHESON TRI-GAS INC	0031675184	OXYGEN & MISC. AS NEEDED	$67.25	*80026210-54100*	*SUPPLIES*	*$67.25*
					Vendor Total:	*$67.25*
MCMASTER-CARR SUPPLY CO	47420321	STOPWATCH, AIR FLOW CONTROL VALVE, PUSH TO CONNECT	$972.01	*92727510-54100*	*SUPPLIES*	*$972.01*
					Vendor Total:	*$972.01*
MENDOCINO COUNTY AUDITOR-CONTROLLER	2504	PROPERTY TAX ADMINISTRATIVE SERVICES FY 24-25	$19,126.83	*20012200-52301*	*PROPERTY TAX ADMIN FEE*	*$19,126.83*
	2508	PROPERTY TAX ADMINSTRATIVE SERVICES FY 24-25	$288.98	*64020213-52301*	*PROPERTY TAX ADMIN FEE*	*$288.98*
					Vendor Total:	*$19,415.81*
MILSOFT UTILITY SOLUTIONS INC	20254709	REPLACEMENT OF UTILITY BILLING	$3,423.37	*20513300-54320*	*SOFTWARE*	*$3,423.37*
					Vendor Total:	*$3,423.37*
MYERS & SONS HI-WAY SAFETY, INC	172613	TRAFFIX 37208-EG, TYPE 1 HIGH IMPACT FOLDING BARRI	$1,821.48	*80026120-54102*	*SMALL TOOLS*	*$1,821.48*
					Vendor Total:	*$1,821.48*
MYERS MEDICAL PHARMACY	659658	EMS SUPPLIES	$249.95	*71021150-54107*	*EMS SUPPLIES*	*$249.95*
					Vendor Total:	*$249.95*
NANETTE WILSON	0040472	REC REFUND: SWIMMING LESSONS	$140.00	*10022300-44910*	*SWIMMING POOL*	*$140.00*
					Vendor Total:	*$140.00*
NICK BARBIERI TRUCKING LLC	1216582-IN	CARDLOCK FUEL PURCHASES	$838.77	*20324100-58410*	*GARAGE LUBRICANTS & PARTS*	*$838.77*
					Vendor Total:	*$838.77*
NOR-CAL RECYCLED ROCK & AGGREGATES INC	28838	MISC ROCK & ROAD PATCH MATERIAL	$138.45	*10024620-54124*	*PW - CONCRETE/ SUPPLIES*	*$138.45*
					Vendor Total:	*$138.45*
ONESOURCE DISTRIBUTORS LLC	S007933537.01	(2U-PA-2) PARKING BUSHING DOUBLE STANDOFF FEEDTHRU	$5,918.97	*80000000-12104*	*INVENTORY - PURCHASES*	*$5,918.97*
					Vendor Total:	*$5,918.97*

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Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
PACE SUPPLY CORPORATION	0210517042	ASCO REULD KIT F, TEMPRESCO ASCO CANCELLATION FEE	$107.88	*84027225-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$107.88*
	0210414484	COVER STEEL WATER W/READER	$2,210.04	*82000000-12104*	*INVENTORY - PURCHASES*	*$2,210.04*
	0210434270	BRS ANGLE BALL METER VLV	$3,124.49	*82000000-12104*	*INVENTORY - PURCHASES*	*$3,124.49*
	0210508029	FORODTAPE, GASKET STAR PIPE	$4,356.07	*82000000-12104*	*INVENTORY - PURCHASES*	*$3,250.49*
				82027114-54100	*SUPPLIES*	*$1,105.58*
	0210565907	18X20 N-12 DUAL WALL IB WT AASHTO PIPE ADS	$468.78	*82027114-54100*	*SUPPLIES*	*$234.39*
				84027221-54100	*SUPPLIES*	*$234.39*
	0210572452	FIRE HYD B/O CHECK 400A STD	$2,383.91	*82027114-54100*	*SUPPLIES*	*$2,383.91*
					Vendor Total:	*$12,651.17*
PASTPERFECT SOFTWARE INC	2025PPWE-43424	ANNUAL SOFTWARE RENEWAL	$696.00	*10022700-54320*	*SOFTWARE*	*$696.00*
					Vendor Total:	*$696.00*
PG&E CO	7075-1 JUN 25	PACIFIC GAS & ELECTRIC	$4.21	*10022100-55210*	*UTILITIES*	*$4.21*
					Vendor Total:	*$4.21*
PHILIP ANDREW WILLIAMS	182	WATER RIGHTS LEGAL COUNSEL	$3,780.00	*82027110-52150*	*LEGAL SERVICES/ EXPENSES*	*$3,780.00*
	183	WATER RIGHTS LEGAL COUNSEL	$17,537.50	*82027110-52150*	*LEGAL SERVICES/ EXPENSES*	*$17,537.50*
					Vendor Total:	*$21,317.50*
PITNEY BOWES INC	1027590565	POSTAGE MACHINE LEASE & SUPPLIES	$567.45	*20513300-54101*	*POSTAGE*	*$567.45*
					Vendor Total:	*$567.45*
PLAZA PAINT INC	D2A6Y	PAINT, SPRING TOOL W. DOOR REMOVAL	$394.01	*82027111-56300*	*BUILDING MAINT. & REPAIR*	*$394.01*
	2KDNL	PAINT	$72.62	*10022700-54100*	*SUPPLIES*	*$72.62*
					Vendor Total:	*$466.63*
POLYDYNE INC	1931420	LIQUID POLYMER - EMULSION, CLA	$9,689.88	*84027225-58202*	*CHEMICALS*	*$9,689.88*
					Vendor Total:	*$9,689.88*
RADIOMOBILE INC	250079	SATELLITE SERVICE PLAN	$11,599.00	*71021100-52100*	*CONTRACTUAL SERVICES*	*$8,599.00*
				71021150-52100	*CONTRACTUAL SERVICES*	*$3,000.00*
					Vendor Total:	*$11,599.00*
RAY C STARKEY	P-2500507	EMBROIDERY SERVICES	$22.32	*20513380-54100*	*SUPPLIES*	*$22.32*
					Vendor Total:	*$22.32*

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Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
REDWOOD TOXICOLOGY LAB INC	00169820255	DRUG SCREEN TESTING	$73.55	*10020210-52100*	*CONTRACTUAL SERVICES*	*$73.55*
					Vendor Total:	*$73.55*
RENEE CHAMP	JUL 13	ESTRELLA 2025 SITP	$1,200.00	*90000000-23226*	*CONCERT SERIES*	*$1,200.00*
					Vendor Total:	*$1,200.00*
RINEHART OIL INC	CL47292	FUEL CARD CHARGES AS NEEDED	$4,432.83	*10020210-56210*	*FUEL & FLUIDS*	*$4,432.83*
	CL47313	FUEL CARD CHARGES AS NEEDED	$976.55	*10022100-56210*	*FUEL & FLUIDS*	*$976.55*
	CL47306	FUEL CARD CHARGES AS NEEDED	$148.54	*10023300-56210*	*FUEL & FLUIDS*	*$148.54*
	CL47314	FUEL CARD CHARGES AS NEEDED	$1,650.73	*10024620-56210*	*FUEL & FLUIDS*	*$1,650.73*
	CL47311	FUEL CARD CHARGES AS NEEDED	$287.98	*20324100-56210*	*FUEL & FLUIDS*	*$287.98*
	CL47281	FUEL CARD CHARGES AS NEEDED	$317.47	*20324100-56210*	*FUEL & FLUIDS*	*$317.47*
	CL47307	FUEL CARD CHARGES AS NEEDED	$252.39	*20513382-56210*	*FUEL & FLUIDS*	*$252.39*
	CL47162	FUEL CARD CHARGES AS NEEDED	$495.96	*20513382-56210*	*FUEL & FLUIDS*	*$495.96*
	CL47312	FUEL CARD CHARGES AS NEEDED	$256.69	*20824700-56210*	*FUEL & FLUIDS*	*$256.69*
	CL47291	FUEL CARD CHARGES AS NEEDED	$2,278.68	*80026400-56210*	*FUEL & FLUIDS*	*$2,278.68*
	CL47310	FUEL CARD CHARGES AS NEEDED	$810.12	*82027111-56210*	*FUEL & FLUIDS*	*$810.12*
					Vendor Total:	*$11,907.94*
SAFEWAY INC	JUN 25	MISC. PURCHASES AS REQUIRED	$39.49	*82027111-58202*	*CHEMICALS*	*$4.34*
				10022700-54100	*SUPPLIES*	*$14.38*
				77725200-54100	*SUPPLIES*	*$20.77*
					Vendor Total:	*$39.49*
SAGE SANGIACOMO	JUL 8, 25	REIMBURSEMENT: MEMBERSHIP DUES CCMF	$400.00	*20012100-57300*	*MEMBERSHIPS & SUBSCRIPTIONS*	*$400.00*
					Vendor Total:	*$400.00*
SCP DISTRIBUTORS LLC	NX403065	PULSAR 1 VALVE	$118.35	*10022100-54100*	*SUPPLIES*	*$118.35*
					Vendor Total:	*$118.35*
SHANE BAARTS	TA 6/30-7/11/25	TRAVEL ADVANCE	$184.00	*10020210-57100*	*LEARNING AND DEVELOPMENT*	*$184.00*
					Vendor Total:	*$184.00*
SHARON WEDEGAERTNER	6/1-30/25	INSTRUCTOR	$1,310.40	*10022850-52100*	*CONTRACTUAL SERVICES*	*$1,310.40*
					Vendor Total:	*$1,310.40*

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Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
SNAP-ON INDUSTRIAL	ARV/64964247	STORK PLIER	$55.36	*20324100-54102*	*SMALL TOOLS*	*$55.36*
					Vendor Total:	*$55.36*
SOLID WASTES SYSTEMS INC	5259	MISC. DUMP FEES	$254.02	*82027111-56300*	*BUILDING MAINT. & REPAIR*	*$48.75*
				10024620-54100	*SUPPLIES*	*$32.50*
				10024620-54100	*SUPPLIES*	*$45.05*
				10521210-54100	*SUPPLIES*	*$127.72*
					Vendor Total:	*$254.02*
STATE WATER RESOURCES CONTROL BOARD	43834 FY 25-26	T1 RENEWAL 25-28 OP# 43834 RANDY BARTON	$55.00	*84027225-57100*	*LEARNING AND DEVELOPMENT*	*$55.00*
					Vendor Total:	*$55.00*
STEVENSON SUPPLY AND TRACTOR CO.	2506534	SUPERBRIGHT REFLECTIVE ROLL-UP SIGN	$1,045.20	*10024620-54130*	*PW - SAFETY*	*$1,045.20*
	2506166	ROUND SHOVEL, SQUARE SHOVEL	$656.52	*82027114-54100*	*SUPPLIES*	*$328.26*
				84027221-54100	*SUPPLIES*	*$328.26*
					Vendor Total:	*$1,701.72*
SWIFTCOMPLY US OPCO INC	INV-10230	BACKFLOW SAAS FY 25-26	$3,780.00	*82027114-54320*	*SOFTWARE*	*$1,890.00*
				84027225-54320	*SOFTWARE*	*$1,890.00*
					Vendor Total:	*$3,780.00*
TIM HOLMES	UKIAH-2507	SOLAR PARKING CANOPY	$1,260.00	*80126100-80220*	*BUILDING IMPROVEMENTS*	*$1,260.00*
					Vendor Total:	*$1,260.00*
TO THE POINT POLYGRAPH	643	BACKGROUND INVESTIGATION	$4,310.80	*10020210-54161*	*BACKGROUND & PHYSICALS*	*$4,310.80*
					Vendor Total:	*$4,310.80*
TOBIAS ROBERTS	0040094	REC REFUND: CPR CLASS CANCELLED	$100.00	*10022850-44915*	*RECREATION PROGRAM INCOME*	*$100.00*
					Vendor Total:	*$100.00*
TRI-CITIES ANSWERING SERVICE & CALL CENTER INC	872007012025	ANSWERING SERVICES	$94.00	*92227410-55100*	*TELEPHONE*	*$94.00*
					Vendor Total:	*$94.00*
TUFTS POLYGRAPH & INVESTIGATION	2025-1052(A)	POLYGRAPH & INVESTIGATION SERVICE	$1,250.00	*71021150-54161*	*BACKGROUND & PHYSICALS*	*$1,250.00*
					Vendor Total:	*$1,250.00*
UKIAH PAPER SUPPLY	568105	JANITORIAL SUPPLIES, MISC AS NEEDED	$81.04	*71021150-54100*	*SUPPLIES*	*$81.04*

List of Checks Presented for Approval on 7/11/2025

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
UKIAH PAPER SUPPLY	568888	JANITORIAL SUPPLIES, MISC AS NEEDED	$166.37	*73022600-54100*	*SUPPLIES*	*$166.37*
	568723	JANITORIAL SUPPLIES, MISC AS NEEDED	$86.16	*82027111-54100*	*SUPPLIES*	*$86.16*
	568905	JANITORIAL SUPPLIES, MISC AS NEEDED	$750.97	*84027225-54100*	*SUPPLIES*	*$750.97*
					Vendor Total:	*$1,084.54*
UKIAH ROUND TREE GLASS INC	32715	DW01851 GBN KIT	$375.00	*82027141-56130*	*EXTERNAL SERVICES*	*$375.00*
					Vendor Total:	*$375.00*
UKIAH TROPHIES & GIFTS	0002937	EMBROIDERY SERVICES	$1,028.87	*10022850-44915*	*RECREATION PROGRAM INCOME*	*$1,028.87*
	0002928	PLAQUE ENGRAVING	$253.68	*10022840-54100*	*SUPPLIES*	*$253.68*
					Vendor Total:	*$1,282.55*
UNITED SITE SERVICES	114-14084356	PORTABLE TOILET RENTAL	$873.41	*90000000-23226*	*CONCERT SERIES*	*$873.41*
	INV-5433140	PORTABLE TOILET RENTAL CONTRACT	$157.39	*80026220-52100*	*CONTRACTUAL SERVICES*	*$157.39*
					Vendor Total:	*$1,030.80*
UNITED TACTICAL SYSTEMS LLC	0098002-IN	PEPPERBALL GUNS AND ROUNDS	$4,072.15	*63020210-54100*	*SUPPLIES*	*$4,072.15*
					Vendor Total:	*$4,072.15*
WALMART COMMUNITY	08960	DAYCAMP SUPPLIES-TOTES	$65.13	*10022840-54100*	*SUPPLIES*	*$65.13*
					Vendor Total:	*$65.13*
WILLOW COUNTY WATER DIST	10010 JUN 25	WATER SERVICES: 1500 S STATE ST	$46.82	*10521210-55210*	*UTILITIES*	*$32.78*
				10621600-55210	*UTILITIES*	*$14.04*
	40353 JUN 25	WATER SERVICES: 1640 S STATE ST	$140.41	*31122000-55210*	*UTILITIES*	*$140.41*
	81154 JUN 25	WATER SERVICES: SEWER TREATMENT PLANT	$139.96	*84027225-55210*	*UTILITIES*	*$139.96*
					Vendor Total:	*$327.19*
WYATT IRRIGATION CO	339418 01	CAMLOCK FEMALE & MALE, MXF BUSH	$15.19	*84027225-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$15.19*
	339743 01	POP-UP ADJ ARC	$27.17	*10022100-54100*	*SUPPLIES*	*$27.17*
	339563 01	SPK 2 SERIES, ADJ SS RISER W/CKVLV	$369.57	*10022100-54100*	*SUPPLIES*	*$369.57*
					Vendor Total:	*$411.93*
					INVOICE TOTAL:	***$2,041,415 .37***

List of Checks Presented for Approval on 7/18/2025

The following list of bills payable was reviewed and approved for payment.

MJR

Signature

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
ACME RIGGING COMPANY INC	344965	494A X 6FT	$223.75	*92727510-54100*	*SUPPLIES*	*$223.75*
					Vendor Total:	*$223.75*
ADAMSON POLICE PRODUCTS	INV436915	SURFACE MOUNT T SERIES, SURFACE MONT SOLO	$851.37	*10521210-56130*	*EXTERNAL SERVICES*	*$851.37*
					Vendor Total:	*$851.37*
ALEXANDER DE GRASSI	APR-JUN 25	QUARTERLY PLANNING COMMISION STIPEND	$300.00	*20010010-51121*	*PLANNING COMMISSION STIPENDS*	*$300.00*
					Vendor Total:	*$300.00*
ALLEN JAMES	4/12/25	INSTRUCTOR	$182.00	*10022850-52100*	*CONTRACTUAL SERVICES*	*$182.00*
					Vendor Total:	*$182.00*
ALLIANT INSURANCE SERVICES INC	3134720	ANNUAL PREMIUM AIRPORT LIABABILTY COVERAGE	$8,000.00	*77725200-52528*	*LIABILITY INSURANCE*	*$8,000.00*
					Vendor Total:	*$8,000.00*
ALONZO FRIAS	BA FY 25/26	BOOT ALLOWANCE	$261.29	*82027111-54100*	*SUPPLIES*	*$261.29*
					Vendor Total:	*$261.29*
ALPHA ANALYTICAL LABORATORIES INC	5025266-RVCWD	MISC. LABORATORY WORK AS NEEDED	$135.00	*92727510-52100*	*CONTRACTUAL SERVICES*	*$135.00*
	5024334-RVCWD	MISC. LABORATORY WORK AS NEEDED	$657.00	*92727510-52100*	*CONTRACTUAL SERVICES*	*$657.00*
					Vendor Total:	*$792.00*
AMAZON CAPITAL SERVICES, INC	1GH7-JG4T-JKVC	MITEL IP PHONE NON BACKLIT	$54.38	*20012100-54330*	*COMPUTER AND TECHNOLOGY*	*$54.38*
	1ML6-WL3G-KNF3	MINECRAFT MOVIE	$27.16	*90000000-23256*	*SPECIAL EVENTS TRUST*	*$27.16*
	1NTQ-X7TW-7GG3	NO PETS ALLOWED SIGNS	$54.40	*90000000-23256*	*SPECIAL EVENTS TRUST*	*$54.40*
	17G3-HJW3-X1QM	ORGANIZATION BAGS, KEY CHAINS, PRAYER POCKET CARDS	$117.50	*10020210-54100*	*SUPPLIES*	*$117.50*
	1L61-VWHN-6LYH	RETURN: POOL SIGNS	($29.18)	*10022300-54100*	*SUPPLIES*	*($29.18)*
	1H7M-49MH-6WC3	POOL SIGNS	$29.18	*10022300-54100*	*SUPPLIES*	*$29.18*
	164V-DLVR-3VLC	CARDSTOCK	$109.63	*10022810-54100*	*SUPPLIES*	*$109.63*
	19KP-F1NQ-6RJK	INK CARTRIDGE	$205.17	*10022810-54100*	*SUPPLIES*	*$205.17*

List of Checks Presented for Approval on 7/18/2025

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
AMAZON CAPITAL SERVICES, INC	14TV-HQGC-MVPK	ADULT SOFTBALL SUPPLIES	$1,254.84	*10022822-54100*	*SUPPLIES*	*$1,254.84*
	1L73-7GW4-RHFW	DAYCAMP SUPPLIES	$401.73	*10022840-54100*	*SUPPLIES*	*$401.73*
	1WK4-J31C-6LNQ	DAYCAMP SUPPLIES	$1,359.57	*10022840-54100*	*SUPPLIES*	*$1,359.57*
	1L73-7GW4-TDD1	CASE FOR IPAD PRO	$32.65	*10024210-54100*	*SUPPLIES*	*$32.65*
	19KP-F1NQ-VTDF	BEIGELOW BLACK AND GREEN TEA, HERBAL TEA, MISC	$133.99	*73022600-54100*	*SUPPLIES*	*$133.99*
	17CX-7G7X-71TK	TRIPOD WITH REMOTE	$12.13	*69624621-52170*	*UKIAH WASTE SOLUTIONS*	*$12.13*
					Vendor Total:	*$3,763.15*
ANDREW STRICKLIN	10260	REIMBURSEMENT: AFTER HOURS WORK EMERGENCY	$22.07	*10024210-54100*	*SUPPLIES*	*$22.07*
					Vendor Total:	*$22.07*
ANIXTER	6372873-04	(LG-56) LUG, DBL SET SCREW, 500, 4 HOLE, 6 BOLT, 8	$1,861.33	*80000000-12104*	*INVENTORY - PURCHASES*	*$1,861.33*
	6372873-03	(LG-56) LUG, DBL SET SCREW, 500, 4 HOLE, 6 BOLT, 8	$2,776.53	*80000000-12104*	*INVENTORY - PURCHASES*	*$2,776.53*
					Vendor Total:	*$4,637.86*
AP TRITON CONSULTING LLC	2025-077	CONSULTINGS SERVICES FOR PHEMS	$5,000.00	*10521210-52100*	*CONTRACTUAL SERVICES*	*$1,000.00*
				71021100-52100	*CONTRACTUAL SERVICES*	*$2,000.00*
				71021150-52100	*CONTRACTUAL SERVICES*	*$2,000.00*
	2025-100	CONSULTINGS SERVICES FOR PHEMS	$5,000.00	*10521210-52100*	*CONTRACTUAL SERVICES*	*$1,000.00*
				71021100-52100	*CONTRACTUAL SERVICES*	*$2,000.00*
				71021150-52100	*CONTRACTUAL SERVICES*	*$2,000.00*
					Vendor Total:	*$10,000.00*
ASCENT AVIATION GROUP INC	1121457	JET A FUEL	$21,083.11	*77725200-58401*	*AVIATION FUEL*	*$21,083.11*
	1127599	JET A FUEL	$23,019.46	*77725200-58401*	*AVIATION FUEL*	*$23,019.46*
					Vendor Total:	*$44,102.57*
AT&T	000023720530	TELEPHONE	$19.54	*10521210-55100*	*TELEPHONE*	*$8.79*
				10523600-55100	*TELEPHONE*	*$0.98*
				10621600-55100	*TELEPHONE*	*$1.95*
				71021100-55100	*TELEPHONE*	*$3.91*
				71021150-55100	*TELEPHONE*	*$3.91*

List of Checks Presented for Approval on 7/18/2025

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
AT&T	000023720529	TELEPHONE	$31.58	*10521210-55100*	*TELEPHONE*	*$14.21*
				10523600-55100	*TELEPHONE*	*$1.57*
				10621600-55100	*TELEPHONE*	*$3.16*
				71021100-55100	*TELEPHONE*	*$6.32*
				71021150-55100	*TELEPHONE*	*$6.32*
					Vendor Total:	*$51.12*
AT&T MOBILITY	287303138700X071025	FIRE CELL PHONES, IPAD, PHONE	$2,534.87	*10521210-55100*	*TELEPHONE*	*$802.29*
				10523600-55100	*TELEPHONE*	*$115.34*
				10621600-55100	*TELEPHONE*	*$212.92*
				71021100-55100	*TELEPHONE*	*$702.16*
				71021150-55100	*TELEPHONE*	*$702.16*
					Vendor Total:	*$2,534.87*
BENJAMIN H HAMPTON	9792	CONDUCT ITE SERVEY FOR FUTURE UPGRADE	$160.00	*20913900-52100*	*CONTRACTUAL SERVICES*	*$160.00*
					Vendor Total:	*$160.00*
BKF ENGINEERS	25060879	LOW GAP ROUNDABOUT ENGINEERING	$891.75	*50924210-80230*	*INFRASTRUCTURE*	*$891.75*
					Vendor Total:	*$891.75*
CALPERS	100000017807596	SSA ANNUAL FEE: RVCWD	$75.00	*92727500-59101*	*FEES*	*$75.00*
					Vendor Total:	*$75.00*
CASEY TERRILL	0038959	REC REFUND: SWIMMING	$59.50	*10022300-44910*	*SWIMMING POOL*	*$59.50*
					Vendor Total:	*$59.50*
CHEYANNE CEJA	0040816	REC REFUND: SWIMMING LESSON CANCELED	$70.00	*10022300-44910*	*SWIMMING POOL*	*$70.00*
					Vendor Total:	*$70.00*
CHRISTOPHER WALKER	BA FY 24/25	BOOT ALLOWANCE	$104.51	*20824300-54100*	*SUPPLIES*	*$104.51*
					Vendor Total:	*$104.51*
CIRCLE PIZZA LLC	2019499	STREETS & PARKS MEETING	$138.60	*10022100-54100*	*SUPPLIES*	*$69.30*
				10024620-54100	*SUPPLIES*	*$69.30*
					Vendor Total:	*$138.60*
CLEARLAKE LAVA INC	39403	5/16" MINUS SAND	$524.45	*10022100-54100*	*SUPPLIES*	*$524.45*
					Vendor Total:	*$524.45*

List of Checks Presented for Approval on 7/18/2025

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
CLERK-RECORDER, MENDOCINO COUNTY	2024/25-61	ELECTION SERVICES	$36,974.20	*91521400-52154*	*ELECTION EXPENSE*	*$36,974.20*
					Vendor Total:	*$36,974.20*
COFFEE CRITIC INC, THE	R38858	MISC. COFFEE SUPPLIES AS NEEDED	$110.00	*20012200-54100*	*SUPPLIES*	*$110.00*
					Vendor Total:	*$110.00*
COLANTUONO HIGHSMITH & WHATLEY PC	66119	OUTSIDE COUNSEL FOR CITY ATTORNEY	$1,341.50	*10014000-52150*	*LEGAL SERVICES/ EXPENSES*	*$1,341.50*
					Vendor Total:	*$1,341.50*
DANIEL F MEAD	52203	DUPLICATE KEYS, REPAIRS & MISC	$109.26	*82027111-54100*	*SUPPLIES*	*$109.26*
					Vendor Total:	*$109.26*
DAVID MENDEZ	3/13-7/17/25	MILEAGE REIMBURSEMENT	$38.50	*20413500-54100*	*SUPPLIES*	*$38.50*
					Vendor Total:	*$38.50*
DELL MARKETING LP	10818780480	PD MONITORS DELL PRO 27 PLUS MONITOR	$1,413.92	*10020210-54330*	*COMPUTER AND TECHNOLOGY*	*$1,413.92*
					Vendor Total:	*$1,413.92*
DOUGLAS ERIC JOHNSON	APR-JUN 25	QUARTERLY PLANNING COMMISION STIPEND	$300.00	*20010010-51121*	*PLANNING COMMISSION STIPENDS*	*$300.00*
					Vendor Total:	*$300.00*
EFAX CORPORATE	5530550	EFAX SERVICES	$159.90	*20012200-52100*	*CONTRACTUAL SERVICES*	*$159.90*
					Vendor Total:	*$159.90*
ELLISON SYSTEMS INC	1749742391	INDUSTRIAL PRECIOSN LINE MARKING PAINT	$327.93	*80026120-54100*	*SUPPLIES*	*$327.93*
					Vendor Total:	*$327.93*
EUREKA OXYGEN CO	482470	EQUIPMENT MAINTENANCE	$507.39	*10521210-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$507.39*
	482471	EQUIPMENT MAINTENANCE	$560.00	*10521210-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$560.00*
	482469	EQUIPMENT MAINTENANCE	$342.00	*71021150-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$342.00*
	482675	SERVICE, PIN PULL, HYDROTEST, FUEL FIRE SERVICE	$538.25	*20324100-56112*	*EQUIPMENT PARTS FOR RESALE*	*$538.25*
					Vendor Total:	*$1,947.64*
EVERGREEN JOB & SAFETY TRAINING INC	2025	JOB AND SAFETY TRAINING – JUNE 2025	$2,395.00	*80026110-52100*	*CONTRACTUAL SERVICES*	*$2,395.00*
					Vendor Total:	*$2,395.00*

List of Checks Presented for Approval on 7/18/2025

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
FRIEDMANS HOME IMPROVEMENT	INV20239354	OUTLET BOX, COPPER ADAPTER, CLEANOUT PLUG & MISC	$119.12	*10521210-54100*	*SUPPLIES*	*$119.12*
	INV20300432	BOLT, POP UP	$70.20	*77725200-54100*	*SUPPLIES*	*$70.20*
	INV20172119	BALL VALVE BRASS	$99.58	*92227420-54100*	*SUPPLIES*	*$99.58*
					Vendor Total:	*$288.90*
GEORGE PETERSEN INSURANCE COMPANY INC	96485	TOUCH A TRUCK EVENT INSURANCE	$2,108.83	*90000000-23256*	*SPECIAL EVENTS TRUST*	*$2,108.83*
					Vendor Total:	*$2,108.83*
GHD INC	380-0072745	SCHOOL STREET MULTIMODAL TRANS	$11,368.82	*10024210-52100*	*CONTRACTUAL SERVICES*	*$11,368.82*
					Vendor Total:	*$11,368.82*
GRAINGER INC	9556382738	BUFFER SOLUTION	$316.79	*84027225-54103*	*LAB SUPPLIES*	*$316.79*
					Vendor Total:	*$316.79*
HACH COMPANY	14495389	NTU KIT WITH RFID TAG, ORP STD	$613.06	*84027225-54103*	*LAB SUPPLIES*	*$613.06*
					Vendor Total:	*$613.06*
HDL COREN & CONE	SIN051907	MASTER TAX SHARING AGREEMENT D	$6,850.00	*20012200-54100*	*SUPPLIES*	*$6,850.00*
					Vendor Total:	*$6,850.00*
HINDERLITER DE LLAMAS AND ASSOCIATES	SIN050845	SALES, USE & TRANSACTIONS TAX	$300.00	*20013400-52100*	*CONTRACTUAL SERVICES*	*$300.00*
	SIN050928	SALES, USE & TRANSACTIONS TAX	$1,622.01	*20013400-52100*	*CONTRACTUAL SERVICES*	*$1,622.01*
					Vendor Total:	*$1,922.01*
HOME DEPOT CREDIT SERVICES	12344	FLOOR BOX KIT, CONDUIT, CONN PKS	$122.64	*20824700-56300*	*BUILDING MAINT. & REPAIR*	*$122.64*
	82857	WSTR SHERLOCK, BRASS LOCKS	$105.61	*71021100-56300*	*BUILDING MAINT. & REPAIR*	*$105.61*
	8072356	MHT FOLDING HAND TRUCK	$54.42	*20824700-54102*	*SMALL TOOLS*	*$54.42*
	6020929	HDX TOUGH TOTE: DAYCAMP SUPPLIES	$260.97	*10022840-54100*	*SUPPLIES*	*$260.97*
	8030151	BUCKET, SQUEEGEE, CONTRACTOR BAGS, GPW	$880.10	*71021150-54100*	*SUPPLIES*	*$880.10*
					Vendor Total:	*$1,423.74*
INTERWEST CONSULTING GROUP INC	2094132	ON-CALL BUILDING & PLAN CHECK	$385.00	*10523600-52100*	*CONTRACTUAL SERVICES*	*$385.00*
					Vendor Total:	*$385.00*
KASEYA US LLC	2464554489047	IT GLUE/KASEYA SOFTWARE	$408.45	*20913910-54320*	*SOFTWARE*	*$408.45*
					Vendor Total:	*$408.45*

List of Checks Presented for Approval on 7/18/2025

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
LARRY WALKER ASSOCIATES INC	00564.08-44	CONSULTING SVCS - NPDES & RECY	$4,557.50	*84027225-52100*	*CONTRACTUAL SERVICES*	*$4,557.50*
					Vendor Total:	*$4,557.50*
LC ACTION POLICE SUPPLY LTD	56221	EPR COLT AR 15 RIFLES	$4,389.11	*10020210-54202*	*MAJOR CRIME INVESTIGATIONS*	*$4,389.11*
					Vendor Total:	*$4,389.11*
LIEBERT CASSIDY WHITMORE	296323	LEGAL SERVICES PERTAINING TO E	$6,355.00	*20016100-52150*	*LEGAL SERVICES/ EXPENSES*	*$6,355.00*
					Vendor Total:	*$6,355.00*
LYMAN GROUP INC	1955525	BAG BURLAP	$9.64	*84027225-54100*	*SUPPLIES*	*$9.64*
					Vendor Total:	*$9.64*
MENDO MILL & LUMBER CO	36905/1	MINI PLIERS, FASTENERS	$13.10	*10521210-56300*	*BUILDING MAINT. & REPAIR*	*$13.10*
	36898/1	FASTENERS	$16.96	*10521210-56300*	*BUILDING MAINT. & REPAIR*	*$16.96*
	36883/1	HWH SELF DRILL	$26.28	*10521210-56300*	*BUILDING MAINT. & REPAIR*	*$26.28*
	36139/1	PNT BRSH, C K EXT SAT MTB	$38.06	*10521210-56300*	*BUILDING MAINT. & REPAIR*	*$38.06*
	35932/1	SCREEN FIBER CHAR, TORCH BACKYARD, PROPAIN, SCEEN	$136.28	*10521210-56300*	*BUILDING MAINT. & REPAIR*	*$136.28*
	36416/1	SPRYPNT, RLR TRM, RYL EXT	$154.88	*10521210-56300*	*BUILDING MAINT. & REPAIR*	*$154.88*
	35927/1	PUTTY KNIFE, CAULKING, PRESTBLOCK SLNT, RING	$267.33	*10521210-56300*	*BUILDING MAINT. & REPAIR*	*$267.33*
	36358/1	RYL EXT SG UWB, ORG PT TP, MSKING FLM PRE TPD	$740.86	*10521210-56300*	*BUILDING MAINT. & REPAIR*	*$740.86*
	37056/1	RD HMMR BIT SDS	$14.01	*82027111-56300*	*BUILDING MAINT. & REPAIR*	*$14.01*
	37071/1	PIPE, ELBOW, COUPLING, UNION IRON, TEE, SOCKET ADA	$82.08	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$82.08*
	36037/1	IRWIN SPRING CMLP MET	$11.74	*10521210-54100*	*SUPPLIES*	*$11.74*
	35418/1	PELLETS	$34.71	*10521210-54100*	*SUPPLIES*	*$34.71*
	35505/1	RETURN: OC R19 KFT BATT	($150.83)	*10621600-54100*	*SUPPLIES*	*($150.83)*
	37121/1	RETURN: KFT BATT, CREDIT RETURN DOUG FIRE, KNIFE	($16.82)	*10621600-54100*	*SUPPLIES*	*($16.82)*
	37179/1	PEX ADAPTER	$3.87	*10621600-54100*	*SUPPLIES*	*$3.87*
	37149/1	INSUL CLAMPS RUBR	$7.70	*10621600-54100*	*SUPPLIES*	*$7.70*
	37187/1	SPLYFCT3/8X1/2X16PV C LL	$8.73	*10621600-54100*	*SUPPLIES*	*$8.73*
	35729/1	AUTO SHUTOFF GAS CAN 5 GAL	$30.73	*10621600-54100*	*SUPPLIES*	*$30.73*

List of Checks Presented for Approval on 7/18/2025

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
MENDO MILL & LUMBER CO	37307/1	COMPRSN UNION, CLAMP HOSE, TUBE COPPER REF	$36.71	*10621600-54100*	*SUPPLIES*	*$36.71*
	37289/1	ADAPTR PTC, CONNECJTORL SPLY LINE, THREAD SEAL TAP	$59.83	*10621600-54100*	*SUPPLIES*	*$59.83*
	36433/1	DECK SCREW PP	$99.22	*10621600-54100*	*SUPPLIES*	*$99.22*
	35720/1	AGNL FIN, PRIVACY DELTA STNCHR, ROLLER, CAULKING	$145.58	*10621600-54100*	*SUPPLIES*	*$145.58*
	36135/1	FIRE EXT, LINE TRIMMER, DW SCREWS, JOINT TAPE	$285.18	*10621600-54100*	*SUPPLIES*	*$285.18*
	36210/1	DF STD& BTR, DOUG FIR, SHEETROCK, JOINT CMPND	$1,049.11	*10621600-54100*	*SUPPLIES*	*$1,049.11*
	37201/1	FUSE AUTO ATC 5AMP CD5	$8.62	*82027111-54100*	*SUPPLIES*	*$8.62*
	36746/1	SAFTY GLS, HALF FACE RESP	$81.96	*92227410-54100*	*SUPPLIES*	*$81.96*
	36097/1	WASHER, CLEAN CLTH MICROFIBER, DSP GLOVES	$46.86	*92727510-54100*	*SUPPLIES*	*$46.86*
	35577/1	THHN WIRE STR, SOL, MOUNTING TAPE, FASTENERS, VACC	$293.52	*92727520-54100*	*SUPPLIES*	*$293.52*
					Vendor Total:	*$3,526.26*
NCPA	006102-0725030	JULY 25 NCPA	$1,076,970.00	*80026440-58104*	*NCPA MANAGEMENT SERVICES*	*$60,588.00*
				80026440-58101	*NCPA PLANT GENERATION*	*$444,400.00*
				80026440-58102	*NCPA POWER PURCHASES*	*$387,151.00*
				80026440-58105	*NCPA THIRD PARTY SALES*	*($8,430.00)*
				80026440-58103	*NCPA TRANSMISSION*	*$193,261.00*
					Vendor Total:	*$1,076,970.00*
NICK BARBIERI TRUCKING LLC	1218839-IN	CARDLOCK FUEL PURCHASES	$1,478.43	*20824300-56210*	*FUEL & FLUIDS*	*$1,478.43*
	1219190-IN	CARDLOCK FUEL PURCHASES	$186.22	*20324100-58410*	*GARAGE LUBRICANTS & PARTS*	*$186.22*
					Vendor Total:	*$1,664.65*
OPPERMAN & SON INC	01P82785	AIR FILTER	$93.47	*10024620-56130*	*EXTERNAL SERVICES*	*$93.47*
	01P82843	FRIEGHT IN FOR PARTS	$182.30	*84027221-56130*	*EXTERNAL SERVICES*	*$182.30*
	01P82537	RH FENDER, FENDER FLAP, RH MOIRROR ASSY, STEP BRAC	$2,657.13	*84027221-56130*	*EXTERNAL SERVICES*	*$2,657.13*

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Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
OPPERMAN & SON INC	01P82460	SEAT AIR SPRING	$67.62	*20324100-58510*	*REIMBURSABLE JOBS*	*$67.62*
					Vendor Total:	*$3,000.52*
OREILLY AUTO PARTS	2707-422444	SPRAY PAINT, ENGINE PAINT	$26.65	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$26.65*
	2707-414111	CORE RETURNS	($110.00)	*20324100-56112*	*EQUIPMENT PARTS FOR RESALE*	*($110.00)*
	2707-418034	MINI BULB	$9.12	*20324100-56112*	*EQUIPMENT PARTS FOR RESALE*	*$9.12*
	2707-422562	RETURN: THERMO GASKT, CORE RETURNS, BATTERY FEES	($542.80)	*10020210-56130*	*EXTERNAL SERVICES*	*($22.00)*
				80026110-56130	*EXTERNAL SERVICES*	*($494.43)*
				82027141-56130	*EXTERNAL SERVICES*	*($26.37)*
	2707-422216	CORE RETURN	($44.00)	*10020210-56130*	*EXTERNAL SERVICES*	*($44.00)*
	2707-416086	DISC BRK KIT	$12.42	*10020210-56130*	*EXTERNAL SERVICES*	*$12.42*
	2707-417565	STAT HSG ASY	$18.52	*10020210-56130*	*EXTERNAL SERVICES*	*$18.52*
	2707-418084	OIL FILTER, AIR FILTER	$20.14	*10020210-56130*	*EXTERNAL SERVICES*	*$20.14*
	2707-420180	WASHR NOZZLE, VAC TUBING	$37.24	*10020210-56130*	*EXTERNAL SERVICES*	*$37.24*
	2707-415954	STANDARD IGNITION	$51.72	*10020210-56130*	*EXTERNAL SERVICES*	*$51.72*
	2707-422044	SPRAK PLUG, MANIFOLD SET	$55.56	*10020210-56130*	*EXTERNAL SERVICES*	*$55.56*
	2707-417561	ENGINE COOLA	$74.90	*10020210-56130*	*EXTERNAL SERVICES*	*$74.90*
	2707-418190	ENGINE MOUNT	$75.90	*10020210-56130*	*EXTERNAL SERVICES*	*$75.90*
	2707-416252	HRMNC BALNCR, MICRO V BELT	$83.82	*10020210-56130*	*EXTERNAL SERVICES*	*$83.82*
	2707-422157	BATTERY, CORE CHARGE, BATTERY FEE	$119.78	*10020210-56130*	*EXTERNAL SERVICES*	*$119.78*
	2707-415971	CTRL ARM ASY	$207.73	*10020210-56130*	*EXTERNAL SERVICES*	*$207.73*
	2707-415944	BATTERY, CORE CHARGE, BATTERY FEE	$247.03	*10020210-56130*	*EXTERNAL SERVICES*	*$247.03*
	2707-415880	BALL JOINT, STAT HSG ASY, ENGINE COOLA, ANTIFREZ	$254.23	*10020210-56130*	*EXTERNAL SERVICES*	*$254.23*
	2707-416264	CTRL ARM ASY	$314.24	*10020210-56130*	*EXTERNAL SERVICES*	*$314.24*
	2707-420174	DISC PAD SET, BRAKE ROTOR, FUEL FILTER, ULTRA STAT	$426.77	*10020210-56130*	*EXTERNAL SERVICES*	*$426.77*
	2707-422039	BATTERY, CORE CHARGE, BATTERY FEE	$494.07	*10020210-56130*	*EXTERNAL SERVICES*	*$494.07*

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Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
OREILLY AUTO PARTS	2707-414066	BATTERY, CORE CHARGE, BATTERY FEE	$533.74	*10020210-56130*	*EXTERNAL SERVICES*	*$533.74*
	2707-422662	MICRO-V BELT	$30.49	*10022100-56130*	*EXTERNAL SERVICES*	*$30.49*
	2707-415126	MUD FLAP	$32.66	*10024620-56130*	*EXTERNAL SERVICES*	*$32.66*
	2707-416032	GASOLINE JUG, FUNNELL	$51.15	*10024620-56130*	*EXTERNAL SERVICES*	*$51.15*
	2707-419942	COIL ASY IGN	$164.75	*10024620-56130*	*EXTERNAL SERVICES*	*$164.75*
	2707-418682	BATTERY, CORE CHARGE, BATTERY FEE	$203.44	*10024620-56130*	*EXTERNAL SERVICES*	*$203.44*
	2707-418301	DISC PAD SET, BRAKE ROTOR, BEARING, WHL SEAL	$397.20	*10024620-56130*	*EXTERNAL SERVICES*	*$397.20*
	2707-418004	RETURN: COOLANT HOSE	($71.30)	*10521210-56130*	*EXTERNAL SERVICES*	*($71.30)*
	2707-423390	BUTT SPLICE	$12.49	*10521210-56130*	*EXTERNAL SERVICES*	*$12.49*
	2707-422700	SHOP TOWEL	$37.00	*10521210-56130*	*EXTERNAL SERVICES*	*$37.00*
	2707-417434	CABIN FILTER, GL WIPER FLD	$38.07	*10521210-56130*	*EXTERNAL SERVICES*	*$38.07*
	2707-414026	HOSE	$171.30	*10521210-56130*	*EXTERNAL SERVICES*	*$171.30*
	2707-417879	BATTERY, CORE CHARGE, BATTERY FEE	$481.26	*10521210-56130*	*EXTERNAL SERVICES*	*$481.26*
	2707-420353	MINI BULB	$4.13	*20513382-56130*	*EXTERNAL SERVICES*	*$4.13*
	2707-416049	OIL FILTER	$12.19	*20824700-56130*	*EXTERNAL SERVICES*	*$12.19*
	2707-422040	INT DR HANDLE, MINI BULB	$13.33	*77725200-56130*	*EXTERNAL SERVICES*	*$13.33*
	2707-418215	OIL FILTER	$5.76	*80026110-56130*	*EXTERNAL SERVICES*	*$5.76*
	2707-423434	CABIN FILTER	$32.64	*80026110-56130*	*EXTERNAL SERVICES*	*$32.64*
	2707-423403	AIR FILTER	$37.38	*80026110-56130*	*EXTERNAL SERVICES*	*$37.38*
	2707-418234	OIL PAN, OIL PAN GSKT, AC HOSE ASSY	$166.60	*80026110-56130*	*EXTERNAL SERVICES*	*$166.60*
	2707-416257	BATTERY, CORE CHARGE, BATTERY FEE	$494.07	*80026110-56130*	*EXTERNAL SERVICES*	*$494.07*
	2707-416270	BATT TENDER	$152.40	*82027111-56130*	*EXTERNAL SERVICES*	*$152.40*
	2707-416256	BATTERY, CORE CHARGE, BATTERY FEE	$174.51	*82027111-56130*	*EXTERNAL SERVICES*	*$174.51*
	2707-420663	CORE RETURN	($22.00)	*82027114-56130*	*EXTERNAL SERVICES*	*($22.00)*
	2707-415544	STAB BAR LNK	$48.69	*82027114-56130*	*EXTERNAL SERVICES*	*$48.69*
	2707-418572	HOSE	$92.54	*82027141-56130*	*EXTERNAL SERVICES*	*$92.54*
	2707-422254	ACCUMULATOR, AC HOSE ASY, PRESS SWITCH	$112.36	*82027141-56130*	*EXTERNAL SERVICES*	*$112.36*

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Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
OREILLY AUTO PARTS	2707-415132	WATER PUMP, THERMOSTAT, THERMO GASKET, MICROV BELT	$219.70	*82027141-56130*	*EXTERNAL SERVICES*	*$219.70*
	2707-414704	IGN COIL	$45.30	*84027221-56130*	*EXTERNAL SERVICES*	*$45.30*
	2707-420287	BATTERY, CORE CHARGE, BATTERY FEE	$148.40	*84027225-56130*	*EXTERNAL SERVICES*	*$148.40*
	2707-420405	AIR, OIL FILTER, BRAKE PADS, BRAKE ROTOR	$164.24	*84027225-56130*	*EXTERNAL SERVICES*	*$164.24*
	2707-418137	RETURN: DISC PAD SET, BRAKE ROTOR	($157.86)	*20324100-58510*	*REIMBURSABLE JOBS*	*($157.86)*
	2707-418016	RETURN: BRAKE ROTOR	($115.41)	*20324100-58510*	*REIMBURSABLE JOBS*	*($115.41)*
	2707-418014	BRAKE ROTOR	$115.41	*20324100-58510*	*REIMBURSABLE JOBS*	*$115.41*
	2707-418017	BRAKE PADS, BRAKE ROTOR	$146.97	*20324100-58510*	*REIMBURSABLE JOBS*	*$146.97*
	2707-414437	MONSTER PVA, LEATHER WIPE, CAR CLEANER, RAIN X	$87.42	*20824300-54100*	*SUPPLIES*	*$87.42*
					Vendor Total:	*$5,894.06*
OWEN EQUIPMENT SALES	00067667	ACTUATOR-LINEAR, RKR SW	$1,563.47	*10024620-56130*	*EXTERNAL SERVICES*	*$1,563.47*
					Vendor Total:	*$1,563.47*
PAYTON MANTOOTH	TA 6/30-7/11/25	TRAVEL ADVANCE	$184.00	*10020210-57100*	*LEARNING AND DEVELOPMENT*	*$184.00*
					Vendor Total:	*$184.00*
PENCCO INC	205685	LIQUID FERRIC CHLORIDE	$17,293.20	*84027225-58202*	*CHEMICALS*	*$17,293.20*
					Vendor Total:	*$17,293.20*
PETERSON POWER SYSTEMS INC	PC060196903	PARTS & SERVICE REPAIRS AS NEEDED	$23.62	*20324100-56112*	*EQUIPMENT PARTS FOR RESALE*	*$23.62*
					Vendor Total:	*$23.62*
PETERSON TRUCKS INC	300849R	FUEL, OIL FILTERS	$138.32	*20324100-56112*	*EQUIPMENT PARTS FOR RESALE*	*$138.32*
	300985R	WAHER FLUID, LUBE, OIL, FUEL FILTERS	$280.83	*10020210-56130*	*EXTERNAL SERVICES*	*$280.83*
	301238R	FUEL MODULE, OIL FILTER, FUEL/WATER	$112.96	*10024620-56130*	*EXTERNAL SERVICES*	*$112.96*
	CM299845R	CORE RETURN	($367.45)	*10521210-56130*	*EXTERNAL SERVICES*	*($367.45)*
	300985RX1	OIL FILTER, FILTER, L	$68.65	*10521210-56130*	*EXTERNAL SERVICES*	*$68.65*
	300566R	CENTRIFUG, FUEL FILTER, OIL FILTERS	$112.08	*10521210-56130*	*EXTERNAL SERVICES*	*$112.08*
	301317R	12/24V 50, COOLANT, BRAKLEEN	$141.62	*10521210-56130*	*EXTERNAL SERVICES*	*$141.62*
	300563R	FUEL, OIL FITLERS, WASEHR FLUID, BRAKLEEN, CABIN	$906.54	*10521210-56130*	*EXTERNAL SERVICES*	*$906.54*

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Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
PETERSON TRUCKS INC	301140R	SENSOR, NI	$987.33	*10521210-56130*	*EXTERNAL SERVICES*	*$987.33*
	298725R	AIR FILTER	$49.48	*84027221-56130*	*EXTERNAL SERVICES*	*$49.48*
	300810R	FUEL FILTER	$45.54	*20324100-58510*	*REIMBURSABLE JOBS*	*$45.54*
					Vendor Total:	*$2,475.90*
PG&E CO	0853-6 JUN 25	PACIFIC GAS & ELECTRIC	$5,166.26	*31122000-55210*	*UTILITIES*	*$5,166.26*
					Vendor Total:	*$5,166.26*
PITNEY BOWES INC	1027691730	POSTAGE MACHINE LEASE & SUPPLI	$235.91	*20513300-54101*	*POSTAGE*	*$235.91*
					Vendor Total:	*$235.91*
POLYDYNE INC	1892641	FLOSORB ABSORBER	$574.86	*84027225-54102*	*SMALL TOOLS*	*$574.86*
					Vendor Total:	*$574.86*
PUBLIC SERVICE DEPARTMENT	8833	WATER SERVICES: MCWD	$47,362.69	*92227400-52115*	*PERFORMANCE AGREEMENTS*	*$11,511.16*
				92227410-52115	*PERFORMANCE AGREEMENTS*	*$35,851.53*
	8834	WATER SERVICES: RVCWD	$36,555.94	*92727500-52115*	*PERFORMANCE AGREEMENTS*	*$3,637.15*
				92727510-52115	*PERFORMANCE AGREEMENTS*	*$32,918.79*
					Vendor Total:	*$83,918.63*
RAINBOW AGRICULTURAL SERVICES	81128/H	OIL, CHAPS DYNAMIC APRON, BEV GREAR GREASER SET	$155.66	*10024620-54100*	*SUPPLIES*	*$155.66*
	998002/H	MTRC DRILL BIT, RCHT SOCKT, BOLT CUTTER, & MISC	$3,430.68	*10024620-54100*	*SUPPLIES*	*$3,430.68*
					Vendor Total:	*$3,586.34*
RAY C STARKEY	P-2500565	EMBROIDERY SERVICES	$60.00	*73022600-54100*	*SUPPLIES*	*$60.00*
					Vendor Total:	*$60.00*
REDWOOD TREE SERVICE STATIONS INC	JUN 25	CAR WASHES & INTERIOR CLEANING	$640.95	*10020210-56130*	*EXTERNAL SERVICES*	*$12.95*
				10020210-56130	*EXTERNAL SERVICES*	*$16.95*
				10020210-56130	*EXTERNAL SERVICES*	*$16.95*
				10020210-56130	*EXTERNAL SERVICES*	*$16.95*
				10020210-56130	*EXTERNAL SERVICES*	*$17.95*
				10020210-56130	*EXTERNAL SERVICES*	*$19.95*
				10020210-56130	*EXTERNAL SERVICES*	*$21.95*
				10020210-56130	*EXTERNAL SERVICES*	*$21.95*

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Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
REDWOOD TREE SERVICE STATIONS INC	JUN 25	CAR WASHES & INTERIOR CLEANING	$640.95	*10020210-56130*	*EXTERNAL SERVICES*	*$21.95*
				10020210-56130	*EXTERNAL SERVICES*	*$24.95*
				10020210-56130	*EXTERNAL SERVICES*	*$24.95*
				10020210-56130	*EXTERNAL SERVICES*	*$24.95*
				10020210-56130	*EXTERNAL SERVICES*	*$31.95*
				10020210-56130	*EXTERNAL SERVICES*	*$42.95*
				10020210-56130	*EXTERNAL SERVICES*	*$42.95*
				10020210-56130	*EXTERNAL SERVICES*	*$52.95*
				10020210-56130	*EXTERNAL SERVICES*	*$52.95*
				10020210-56130	*EXTERNAL SERVICES*	*$52.95*
				10023300-56130	*EXTERNAL SERVICES*	*$42.95*
				20513382-56130	*EXTERNAL SERVICES*	*$35.95*
				82027114-56130	*EXTERNAL SERVICES*	*$42.95*
					Vendor Total:	*$640.95*
REXEL USA INC	6J35069	BUS FRS R 20 FUSETRON DUAL EL	$168.98	*20824700-56300*	*BUILDING MAINT. & REPAIR*	*$168.98*
	6I92236	PST PS TG 1/4 US EG TG NUT	$21.56	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$21.56*
	6i19429	CAD B140A SHIM WRAP	$71.54	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$71.54*
	6I92195	DRIVER SET RACK, INSUL SCREWDRIVER, CARBIDE KIT	$275.21	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$275.21*
	6I00141	NSI IT, CAD SHIM WRAP	$368.13	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$368.13*
	6H88027	5GAL PULLING LUBE	$128.76	*80000000-12104*	*INVENTORY - PURCHASES*	*$128.76*
	6J98309	PUNCH & DIE SET, SCREWDRIVERS, SBA WIRE STRIPPER	$186.96	*80026200-54102*	*SMALL TOOLS*	*$186.96*
	6K17540	NUT DRVR, SBA HI LVRG DIA, SBA 7-1/4, EXTRA SLIM	$734.37	*82027111-54102*	*SMALL TOOLS*	*$734.37*
					Vendor Total:	*$1,955.51*
RINEHART OIL INC	CL47453	FUEL CARD CHARGES AS NEEDED	$1,140.66	*10022100-56210*	*FUEL & FLUIDS*	*$1,140.66*
	CL47448	FUEL CARD CHARGES AS NEEDED	$69.59	*10024210-56210*	*FUEL & FLUIDS*	*$69.59*
	CL47454	FUEL CARD CHARGES AS NEEDED	$1,665.78	*10024620-56210*	*FUEL & FLUIDS*	*$1,665.78*

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RINEHART OIL INC	CL47272	FUEL CARD CHARGES AS NEEDED	$4,092.40	*10521210-56210*	*FUEL & FLUIDS*	*$3,282.45*
				10523600-56210	*FUEL & FLUIDS*	*$79.62*
				71021100-56210	*FUEL & FLUIDS*	*$730.33*
	CL47415	FUEL CARD CHARGES AS NEEDED	$4,668.23	*10521210-56210*	*FUEL & FLUIDS*	*$3,994.19*
				10523600-56210	*FUEL & FLUIDS*	*$83.55*
				71021100-56210	*FUEL & FLUIDS*	*$590.49*
	CL47331	FUEL CARD CHARGES AS NEEDED	$128.30	*10621600-56210*	*FUEL & FLUIDS*	*$128.30*
	CL47474	FUEL CARD CHARGES AS NEEDED	$552.47	*10621600-56210*	*FUEL & FLUIDS*	*$552.47*
	CL47424	FUEL CARD CHARGES AS NEEDED	$638.48	*20324100-56210*	*FUEL & FLUIDS*	*$638.48*
	CL47447	FUEL CARD CHARGES AS NEEDED	$423.19	*20513382-56210*	*FUEL & FLUIDS*	*$423.19*
	CL47329	FUEL CARD CHARGES AS NEEDED	$3,805.17	*71021150-56210*	*FUEL & FLUIDS*	*$3,805.17*
	CL47472	FUEL CARD CHARGES AS NEEDED	$3,882.27	*71021150-56210*	*FUEL & FLUIDS*	*$3,882.27*
	CL47432	FUEL CARD CHARGES AS NEEDED	$2,153.56	*80026400-56210*	*FUEL & FLUIDS*	*$2,153.56*
	CL47389	FUEL CARD CHARGES AS NEEDED	$2,136.15	*82027114-56210*	*FUEL & FLUIDS*	*$1,068.08*
				84027221-56210	*FUEL & FLUIDS*	*$1,068.07*
	CL47246	FUEL CARD CHARGES AS NEEDED	$2,613.63	*82027114-56210*	*FUEL & FLUIDS*	*$1,306.82*
				84027221-56210	*FUEL & FLUIDS*	*$1,306.81*
	CL47330	FUEL CARD CHARGES AS NEEDED	$1,599.40	*92227410-56210*	*FUEL & FLUIDS*	*$447.83*
				92727520-56210	*FUEL & FLUIDS*	*$447.83*
				93227600-56210	*FUEL & FLUIDS*	*$703.74*
					Vendor Total:	*$29,569.28*
SCOTT SHAVER	88061-7780	REIMBURSEMENT: SHIPPING COMPUTER TO CITY	$50.85	*20913920-54101*	*POSTAGE*	*$50.85*
					Vendor Total:	*$50.85*
SHERI MANNION	980	REIMBURSEMENT: HR MEETING LUNCHEON	$102.01	*20016100-54163*	*INTERVIEW SUPPLIES*	*$102.01*
					Vendor Total:	*$102.01*
SNAP-ON INDUSTRIAL	ARV/65027857	PLIERS, CUTTERS EST FSET, ROLOC DISC HOLDER, WRENC	$511.90	*82027111-54102*	*SMALL TOOLS*	*$511.90*
	ARV/65031724	BIT DR SET, SD SET GREEN, PLRS, ADAPTOR, TOOL KIT	$2,151.08	*82027111-54102*	*SMALL TOOLS*	*$2,151.08*
					Vendor Total:	*$2,662.98*
SONIC NET LLC	1010765159	PHONE SERVICES: JULY	$18.20	*10521210-55100*	*TELEPHONE*	*$5.83*

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Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
SONIC NET LLC	1010765159	PHONE SERVICES: JULY	$18.20	*10523600-55100*	*TELEPHONE*	*$0.91*
				10621600-55100	*TELEPHONE*	*$1.26*
				71021100-55100	*TELEPHONE*	*$5.10*
				71021150-55100	*TELEPHONE*	*$5.10*
	1010550759	PHONE SERVICES: JUNE	$18.20	*10521210-55100*	*TELEPHONE*	*$8.19*
				10523600-55100	*TELEPHONE*	*$0.88*
				10621600-55100	*TELEPHONE*	*$1.85*
				71021100-55100	*TELEPHONE*	*$3.64*
				71021150-55100	*TELEPHONE*	*$3.64*
					Vendor Total:	*$36.40*
SOUTHERN NEW HAMPSHIRE UNIVERSITY	JUN 25-OCT 25	REGISTRATION: AJ JOHNSON	$4,032.00	*20013540-57100*	*LEARNING AND DEVELOPMENT*	*$4,032.00*
					Vendor Total:	*$4,032.00*
SOUTHERN TIRE MART LLC	7740010597	TIRES, TUBES, REPAIRS & LABOR	$94.12	*10020210-56130*	*EXTERNAL SERVICES*	*$94.12*
	7740010465	TIRES, TUBES, REPAIRS & LABOR	$1,158.61	*10020210-56130*	*EXTERNAL SERVICES*	*$1,158.61*
					Vendor Total:	*$1,252.73*
SUSAN JANSSEN	JULY 14, 2025	BILLINGUAL TESTING	$250.00	*20016100-54161*	*BACKGROUND & PHYSICALS*	*$250.00*
	JULY 7, 2025	BILLINGUAL TESTING	$250.00	*20016100-54161*	*BACKGROUND & PHYSICALS*	*$250.00*
					Vendor Total:	*$500.00*
SUSAN ROBERTS	P-751	SEWER LATERAL REIMBURSEMENT	$2,000.00	*84427221-59501*	*GRANTS ISSUED*	*$2,000.00*
					Vendor Total:	*$2,000.00*
TGIF REPAIRS INC	7368	PRINTER REPAIR	$262.50	*80026400-54330*	*COMPUTER AND TECHNOLOGY*	*$262.50*
	7369	PRINTER REPAIR	$262.50	*80026400-54330*	*COMPUTER AND TECHNOLOGY*	*$262.50*
					Vendor Total:	*$525.00*
TIFFANY BREECE	TA 6/22-26/25	TRAVEL ADVANCE	$1,956.05	*20620231-57100*	*LEARNING AND DEVELOPMENT*	*$1,956.05*
					Vendor Total:	*$1,956.05*
TUFTS POLYGRAPH & INVESTIGATION	2025-1067(A)	POLYGRAPH & INVESTIGATION SERVICES	$1,250.00	*10020210-54161*	*BACKGROUND & PHYSICALS*	*$1,250.00*
					Vendor Total:	*$1,250.00*
UKIAH DAILY JOURNAL	0006898847	PUBLISHING SERVICES	$212.81	*10523600-52100*	*CONTRACTUAL SERVICES*	*$212.81*
					Vendor Total:	*$212.81*

List of Checks Presented for Approval on 7/18/2025

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
UKIAH ROUND TREE GLASS INC	32774	CHIP REPAIR	$55.00	*10020210-56130*	*EXTERNAL SERVICES*	*$55.00*
					Vendor Total:	*$55.00*
UKIAH TROPHIES & GIFTS	0002914	EMBROIDERY SERVICES	$1,341.34	*10521210-54106*	*SPECIALTY SUPPLIES*	*$1,341.34*
	0002915	EMBROIDERY SERVICES	$975.52	*71021150-54106*	*SPECIALTY SUPPLIES*	*$975.52*
					Vendor Total:	*$2,316.86*
UKIAH WASTE SOLUTIONS, INC	176969696U034	MSWMA OPERATIONS	$32,902.01	*92000000-52173*	*ILLEGAL DUMP CLEANUP*	*$1,815.74*
				92000000-52170	*UKIAH WASTE SOLUTIONS*	*$31,086.27*
					Vendor Total:	*$32,902.01*
UNITED SITE SERVICES	INV-5430390	PORTABLE TOILET RENTAL CONTRACT	$195.14	*10022100-52100*	*CONTRACTUAL SERVICES*	*$195.14*
	INV-5433103	PORTABLE TOILET RENTAL CONTRACT	$195.14	*10022100-52100*	*CONTRACTUAL SERVICES*	*$195.14*
	INV-5429174	PORTABLE TOILET RENTAL CONTRACT	$109.98	*82027111-54100*	*SUPPLIES*	*$109.98*
					Vendor Total:	*$500.26*
US BANK CORPORATE PAYMENT SERVICES	06-16	TRAVEL AGENT FEES	$13.50	*20913920-51291*	*MISC EMPLOYMENT COSTS*	*$13.50*
	05-28	CAR RENTAL: S SHAVER	$1,809.67	*20913920-51291*	*MISC EMPLOYMENT COSTS*	*$1,809.67*
					Vendor Total:	*$1,823.17*
US CELLULAR	740534021	CELL PHONES	$233.77	*82027111-55100*	*TELEPHONE*	*$185.87*
				84027225-55100	*TELEPHONE*	*$47.90*
					Vendor Total:	*$233.77*
WYATT IRRIGATION CO	339509 01	GRISWOLD NO SOLENOID, CONT TUBE ELBOW	$173.45	*10022100-54100*	*SUPPLIES*	*$173.45*
	339563 02	SPK 700 2 700 2 SERIES	$259.00	*10022100-54100*	*SUPPLIES*	*$259.00*
					Vendor Total:	*$432.45*
					INVOICE TOTAL:	***$1,455,008.33***

List of Checks Presented for Approval on 7/25/2025

The following list of bills payable was reviewed and approved for payment.

MJR

Signature

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
AACTION RENTS	798908A-2	WATER TRUCK RENTAL JUNE	$3,440.50	*10024620-56410*	*EQUIPMENT RENTAL - PRIVATE*	*$3,440.50*
					Vendor Total:	*$3,440.50*
ACME RIGGING COMPANY INC	345844	RUBBER CHOCK BLOCK	$51.15	*82027111-56300*	*BUILDING MAINT. & REPAIR*	*$51.15*
	345737	MEGA SYSTEM HOSE, HOSE ASSEMBLY	$62.35	*10521210-56130*	*EXTERNAL SERVICES*	*$62.35*
					Vendor Total:	*$113.50*
ADAMSON POLICE PRODUCTS	INV433313	80LT TRAFFIC ADVISOR 30" CABLE	$891.06	*10023200-56130*	*EXTERNAL SERVICES*	*$891.06*
					Vendor Total:	*$891.06*
ADVANCED SECURITY SYSTEMS	732991	SECURITY MONITORING - TALMAGE	$30.50	*10521210-52180*	*SECURITY SERVICES*	*$30.50*
					Vendor Total:	*$30.50*
ALL STAR FIRE EQUIPMENT, INC	265464	CREW BOSS CAL FIRE DUAL COMPLIANT WORK/UNIFORM	$2,864.60	*71021150-54106*	*SPECIALTY SUPPLIES*	*$2,864.60*
					Vendor Total:	*$2,864.60*
ALPHA ANALYTICAL LABORATORIES INC	5055769-UKIAHLF	MISC. LABORATORY WORK AS NEEDED	$1,619.00	*70024500-52100*	*CONTRACTUAL SERVICES*	*$1,619.00*
	5055767-UKIAHLF	MISC. LABORATORY WORK AS NEEDE	$3,379.00	*70024500-52100*	*CONTRACTUAL SERVICES*	*$3,379.00*
	5065420-UKIAH	MISC. LABORATORY WORK AS NEEDE	$140.00	*82027111-52100*	*CONTRACTUAL SERVICES*	*$140.00*
	5063923-UKIAH	MISC. LABORATORY WORK AS NEEDE	$220.00	*82027111-52100*	*CONTRACTUAL SERVICES*	*$220.00*
	5067531-UKIAH	MISC. LABORATORY WORK AS NEEDE	$220.00	*82027111-52100*	*CONTRACTUAL SERVICES*	*$220.00*
	5068401-UKIAH	MISC. LABORATORY WORK AS NEEDE	$220.00	*82027111-52100*	*CONTRACTUAL SERVICES*	*$220.00*
	5064408-UKIAH	MISC. LABORATORY WORK AS NEEDE	$240.00	*82027111-52100*	*CONTRACTUAL SERVICES*	*$240.00*
	5065781-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$416.25	*84027221-52100*	*CONTRACTUAL SERVICES*	*$416.25*
	5063908-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$70.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$70.00*
	5063915-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$70.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$70.00*
	5064731-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$70.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$70.00*
	5068241-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$70.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$70.00*

List of Checks Presented for Approval on 7/25/2025

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
ALPHA ANALYTICAL LABORATORIES INC	5064324-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$85.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$85.00*
	5064712-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$85.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$85.00*
	5065416-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$85.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$85.00*
	5065450-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$85.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$85.00*
	5065451-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$85.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$85.00*
	5066005-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$85.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$85.00*
	5066157-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$85.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$85.00*
	5066831-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$85.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$85.00*
	5067159-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$85.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$85.00*
	5067510-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$85.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$85.00*
	5068145-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$85.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$85.00*
	5068346-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$85.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$85.00*
	5068386-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$85.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$85.00*
	5063913-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$95.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$95.00*
	5064025-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$95.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$95.00*
	5064732-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$95.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$95.00*
	5064735-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$95.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$95.00*
	5066086-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$95.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$95.00*
	5067063-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$95.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$95.00*
	5067066-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$95.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$95.00*
	5068289-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$95.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$95.00*
	5068292-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$95.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$95.00*
	5067640--UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$153.75	*84027225-52100*	*CONTRACTUAL SERVICES*	*$153.75*
	5068459-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$153.75	*84027225-52100*	*CONTRACTUAL SERVICES*	*$153.75*
	5067432-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$262.50	*84027225-52100*	*CONTRACTUAL SERVICES*	*$262.50*
	5068070-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$262.50	*84027225-52100*	*CONTRACTUAL SERVICES*	*$262.50*
	5064823-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$421.25	*84027225-52100*	*CONTRACTUAL SERVICES*	*$421.25*
	5065251-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$590.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$590.00*
	5065252-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$670.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$670.00*

List of Checks Presented for Approval on 7/25/2025

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
ALPHA ANALYTICAL LABORATORIES INC	5064793-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$880.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$880.00*
	5066280-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$1,325.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$1,325.00*
	5065563-UKIAHSTP	MISC. LABORATORY WORK AS NEEDE	$1,790.00	*84027225-52100*	*CONTRACTUAL SERVICES*	*$1,790.00*
	5064377-MCWD	MISC. LABORATORY WORK AS NEEDE	$110.00	*92227410-52100*	*CONTRACTUAL SERVICES*	*$110.00*
	5067704-MCWD	MISC. LABORATORY WORK AS NEEDE	$110.00	*92227410-52100*	*CONTRACTUAL SERVICES*	*$110.00*
	5064145-MCWD	MISC. LABORATORY WORK AS NEEDE	$303.00	*92227410-52100*	*CONTRACTUAL SERVICES*	*$303.00*
	5025454-MCWD	MISC. LABORATORY WORK AS NEEDE	$350.00	*92227410-52100*	*CONTRACTUAL SERVICES*	*$350.00*
	5066656-MCWD	MISC. LABORATORY WORK AS NEEDE	$350.00	*92227410-52100*	*CONTRACTUAL SERVICES*	*$350.00*
	5068404-MCWD	MISC. LABORATORY WORK AS NEEDE	$350.00	*92227410-52100*	*CONTRACTUAL SERVICES*	*$350.00*
	5064391-RVCWD	MISC. LABORATORY WORK AS NEEDE	$110.00	*92727510-52100*	*CONTRACTUAL SERVICES*	*$110.00*
	5063952-RVCWD	MISC. LABORATORY WORK AS NEEDE	$131.00	*92727510-52100*	*CONTRACTUAL SERVICES*	*$131.00*
	5064367-RVCWD	MISC. LABORATORY WORK AS NEEDE	$135.00	*92727510-52100*	*CONTRACTUAL SERVICES*	*$135.00*
	5066199-RVCWD	MISC. LABORATORY WORK AS NEEDE	$135.00	*92727510-52100*	*CONTRACTUAL SERVICES*	*$135.00*
	5066991-RVCWD	MISC. LABORATORY WORK AS NEEDE	$657.00	*92727510-52100*	*CONTRACTUAL SERVICES*	*$657.00*
					Vendor Total:	*$17,944.00*
AMAZON CAPITAL SERVICES, INC	16JW-XPJL-MTNT	WIRELESS TRAILER LIGHTS	$261.28	*84027225-56130*	*EXTERNAL SERVICES*	*$261.28*
	1TR1-V4HJ-3RLN	BRACKET HANDLELOK, MOUNTING BRACKET	$960.66	*20324100-58510*	*REIMBURSABLE JOBS*	*$960.66*
	1MJD-KG1K-LVVN	RETURN: DAYCAMP SUPPLIES	($81.65)	*90000000-23256*	*SPECIAL EVENTS TRUST*	*($81.65)*
	17KR-PHCH-63X7	CARDSTOCK, COPY PAPER COLOR	$192.86	*10022810-54100*	*SUPPLIES*	*$192.86*
	1HKP-PH1C-JG79	WHITE BOARD	$22.05	*10023100-54100*	*SUPPLIES*	*$22.05*
	1MYV-Y1VY-CXP9	BANKER BOXES	$80.95	*10023100-54100*	*SUPPLIES*	*$80.95*
	1DLG-YLV3-9XKM	TALL OFFICE CHAIR, STANDING DESK, HEADSET WITH STA	$700.47	*10023100-54100*	*SUPPLIES*	*$700.47*
	1MCD-XHHJ-H7TH	POWER NUT DRIVER SET	$8.70	*80026210-54100*	*SUPPLIES*	*$8.70*
	19PV-9FX3-XXTK	PRINTER STAND	$108.76	*80026400-54100*	*SUPPLIES*	*$108.76*
	1TYH-HY9P-V9WC	COFFEE CABINET	$181.65	*80026400-54100*	*SUPPLIES*	*$181.65*
	1QJ4-4YV6-PKVR	STREAMLIGHT PRO TAC, TONER CARTIDGES	$665.00	*82027111-54100*	*SUPPLIES*	*$332.50*
				84027221-54100	*SUPPLIES*	*$332.50*
					Vendor Total:	*$3,700.93*

List of Checks Presented for Approval on 7/25/2025

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
AMERICAN ASSOCIATION FOR STATE & LOCAL HISTORY INC	46724982 FY 25/26	ANNUAL INSTITUTIONAL MEMBERSHIP	$176.00	*10022700-57300*	*MEMBERSHIPS & SUBSCRIPTIONS*	*$176.00*
					Vendor Total:	*$176.00*
AMERICAN ASSOCIATION OF MUSEUMS	Renewal FY 25/26	ANNUAL MEMBERSHIP	$195.00	*10022700-57300*	*MEMBERSHIPS & SUBSCRIPTIONS*	*$195.00*
					Vendor Total:	*$195.00*
AMERICAN NATIONAL RED CROSS & ITS CONSTITUENT	22852663	LICENSED TRAINING PROVIDER AGR	$1,130.00	*10022300-54100*	*SUPPLIES*	*$1,130.00*
					Vendor Total:	*$1,130.00*
AMERICAN SOCIETY OF COMPOSERS	200012210370	CONCERT LIC FEE	$992.14	*90000000-23226*	*CONCERT SERIES*	*$992.14*
					Vendor Total:	*$992.14*
AT&T	00023780862	FIBER INTERNET	$1,501.16	*20913900-52601*	*DATA STORAGE & CONNECTIVITY*	*$1,501.16*
	00023742983	T1 TO INTERNET	$582.47	*20913900-55100*	*TELEPHONE*	*$582.47*
	00023743379	TELEPHONE	$4,594.96	*20913900-55100*	*TELEPHONE*	*$4,594.96*
					Vendor Total:	*$6,678.59*
AT&T MOBILITY	875108535X071425	VOICE & DATA CELL PHONES	$829.83	*10023200-54330*	*COMPUTER AND TECHNOLOGY*	*$43.23*
				10023300-54330	*COMPUTER AND TECHNOLOGY*	*$43.23*
				10022100-55100	*TELEPHONE*	*$259.38*
				10022700-55100	*TELEPHONE*	*$23.24*
				10022810-55100	*TELEPHONE*	*$86.46*
				20913900-55100	*TELEPHONE*	*$86.46*
				80026400-55100	*TELEPHONE*	*$36.22*
				82027114-55100	*TELEPHONE*	*$43.23*
				84027221-55100	*TELEPHONE*	*$116.94*
				92227410-55100	*TELEPHONE*	*$18.41*
				92727510-55100	*TELEPHONE*	*$18.41*
				93227610-55100	*TELEPHONE*	*$18.40*
				82027111-55210	*UTILITIES*	*$36.22*
	83218877X071425	DATA & VOICE CELL PHONES	$247.03	*10020210-55100*	*TELEPHONE*	*$43.23*

List of Checks Presented for Approval on 7/25/2025

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
AT&T MOBILITY	83218877X071425	DATA & VOICE CELL PHONES	$247.03	*20620231-55100*	*TELEPHONE*	*$15.53*
				77725200-55100	*TELEPHONE*	*$55.22*
				80026400-55100	*TELEPHONE*	*$86.46*
				82027111-55100	*TELEPHONE*	*$15.53*
				84027221-55100	*TELEPHONE*	*$31.06*
	832056361X071425	APN MODEMS	$357.32	*10020210-55100*	*TELEPHONE*	*$357.32*
	287325300206X071425	IT ON CALL PHONE	$36.22	*20913900-55100*	*TELEPHONE*	*$36.22*
					Vendor Total:	*$1,470.40*
B & B INDUSTRIAL SUPPLY INC	288944	FLOOR PLATE, SHEARING, TAPER TAP	$105.53	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$105.53*
	288927	SQUARE TUBING, TORCH CUT FEE, WELD TAB HOLE, CAP	$143.95	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$143.95*
	288990	CARBIDE BURR SET, FLAT WASHERS, LOCK WASHERS	$214.03	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$214.03*
	289136	1/4-28 YOKE END	$13.04	*10024620-56130*	*EXTERNAL SERVICES*	*$13.04*
	288620	STAINLESS WEDGE ANCHOR	$253.18	*10022100-54100*	*SUPPLIES*	*$253.18*
	289089	121 MED STRENGTH THREAD LOCKER, 140 HIG STRENGTH	$74.01	*20824300-54100*	*SUPPLIES*	*$74.01*
					Vendor Total:	*$803.74*
BELKORP AG	1103141	V BELT	$96.36	*10022100-56130*	*EXTERNAL SERVICES*	*$96.36*
	1102110	O RINGS, V BELT, COMPRESSOR	$1,102.97	*10022100-56130*	*EXTERNAL SERVICES*	*$1,102.97*
					Vendor Total:	*$1,199.33*
BRANDON COLLIS BEGLEY	41	ALS MEDICAL DIRECTION OVERSIGH	$4,300.00	*71021100-52112*	*M. S. OVERSIGHT*	*$2,150.00*
				71021150-52112	*M. S. OVERSIGHT*	*$2,150.00*
					Vendor Total:	*$4,300.00*
BRIAN STEPHEN BROWN	6/3-7/9/25	INSTRUCTOR	$3,102.50	*10022850-52100*	*CONTRACTUAL SERVICES*	*$3,102.50*
					Vendor Total:	*$3,102.50*
CA DIVISION OF THE STATE ARCHITECT	2ND QTR 25	2ND QTR DISABILITY ACCESS & EDUCATION FEE 25	$55.50	*90000000-23012*	*STATE $1 BUS. LIC. SET ASIDE*	*($499.50)*
				90000000-23002	*STATE $4 BUSINESS LICENSE FEE*	*$555.00*
					Vendor Total:	*$55.50*
CALIFORNIA INTERGOVERN-MENTAL RISK AUTHORITY	INV-2743	CIRA WORK COMP APR-JUN 25 LIAB APR-JUN 25	$37,327.48	*20216200-52522*	*LIABILITY & PROPERTY DEDUCT*	*$23,589.75*

List of Checks Presented for Approval on 7/25/2025

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
CALIFORNIA INTERGOVERN-MENTAL RISK AUTHORITY	INV-2743	CIRA WORK COMP APR-JUN 25 LIAB APR-JUN 25	$37,327.48	*20116220-52525*	*WORKER'S COMP. EXPENSE*	*$13,737.73*
					Vendor Total:	*$37,327.48*
CAROLLO ENGINEERS INC	FB38925	DESIGN PHASES I&II RECYCLED WA	$89,379.25	*83027330-80230*	*INFRASTRUCTURE*	*$89,379.25*
					Vendor Total:	*$89,379.25*
CARTER GRISSOM	JUL 27	PROMOTER FOR 2025 SUNDAYS IN THE PARK	$500.00	*90000000-23226*	*CONCERT SERIES*	*$500.00*
					Vendor Total:	*$500.00*
CENTER FOR PUBLIC SAFETY MANAGEMENT LLC	2527	UVFA STRATEGIC PLANNING SERVIC	$21,740.00	*10521210-52100*	*CONTRACTUAL SERVICES*	*$10,000.00*
				10523600-52100	*CONTRACTUAL SERVICES*	*$11,740.00*
	2548	UVFA STRATEGIC PLANNING SERVIC	$7,172.26	*10523600-52100*	*CONTRACTUAL SERVICES*	*$410.00*
				10621600-52100	*CONTRACTUAL SERVICES*	*$3,502.26*
				71021100-52100	*CONTRACTUAL SERVICES*	*$3,260.00*
	2575	UVFA STRATEGIC PLANNING SERVIC	$21,740.00	*71021100-52100*	*CONTRACTUAL SERVICES*	*$6,740.00*
				71021150-52100	*CONTRACTUAL SERVICES*	*$15,000.00*
					Vendor Total:	*$50,652.26*
CINTAS CORPORATION	4233186103	RUG, MAT & UNIFORM SERVICES	$134.33	*20324100-52100*	*CONTRACTUAL SERVICES*	*$65.79*
				20824300-52100	*CONTRACTUAL SERVICES*	*$68.54*
	4234649379	RUG, MAT & UNIFORM SERVICES	$134.33	*20324100-52100*	*CONTRACTUAL SERVICES*	*$65.79*
				20824300-52100	*CONTRACTUAL SERVICES*	*$68.54*
	4232486078	RUG, MAT & UNIFORM SERVICES	$267.87	*20324100-52100*	*CONTRACTUAL SERVICES*	*$65.79*
				20824300-52100	*CONTRACTUAL SERVICES*	*$202.08*
	4233942216	RUG, MAT & UNIFORM SERVICES	$316.83	*20324100-52100*	*CONTRACTUAL SERVICES*	*$236.09*
				20824300-52100	*CONTRACTUAL SERVICES*	*$80.74*
	5275851316	FIRST AID SUPPLIES	$300.14	*10024620-54100*	*SUPPLIES*	*$150.07*
				84027221-54100	*SUPPLIES*	*$150.07*
	5275851317	FIRST AID SUPPLIES	$99.72	*20324100-54100*	*SUPPLIES*	*$99.72*
	4233074377	RUG, MAT & UNIFORM SERVICES	$52.33	*77725200-54100*	*SUPPLIES*	*$52.33*
	4234514390	RUG, MAT & UNIFORM SERVICES	$52.33	*77725200-54100*	*SUPPLIES*	*$52.33*

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Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
CINTAS CORPORATION	4232326917	RUG, MAT & UNIFORM SERVICES	$54.25	*77725200-54100*	*SUPPLIES*	*$54.25*
	4233774418	RUG, MAT & UNIFORM SERVICES	$54.25	*77725200-54100*	*SUPPLIES*	*$54.25*
	4235264224	RUG, MAT & UNIFORM SERVICES	$54.25	*77725200-54100*	*SUPPLIES*	*$54.25*
	5275577007	FIRST AID SUPPLIES	$90.29	*77725200-54100*	*SUPPLIES*	*$90.29*
	5275577011	FIRST AID SUPPLIES	$65.31	*80026110-54100*	*SUPPLIES*	*$65.31*
					Vendor Total:	*$1,676.23*
CIVICPLUS LLC	337992	CIVICPLUS	$22,375.03	*20012500-54320*	*SOFTWARE*	*$22,375.03*
					Vendor Total:	*$22,375.03*
COLLEEN HOLLY HUNT	02607	24/25 STORM WATER SUPPORT SERV	$8,468.63	*10024224-52100*	*CONTRACTUAL SERVICES*	*$8,468.63*
					Vendor Total:	*$8,468.63*
CONNECTWISE LLC	INV01411678	CONNECTWISE IT HELPDESK SOFTWARE	$700.07	*20913900-54320*	*SOFTWARE*	*$700.07*
					Vendor Total:	*$700.07*
D WALTER K BARR	9122	DOT PHYSICALS	$150.00	*80026400-54161*	*BACKGROUND & PHYSICALS*	*$150.00*
					Vendor Total:	*$150.00*
DELL MARKETING LP	10818436908	DELL PRO 14 PLUS	$3,323.30	*20513300-54330*	*COMPUTER AND TECHNOLOGY*	*$3,323.30*
					Vendor Total:	*$3,323.30*
DEPARTMENT OF JUSTICE	829792	FINGERPRINTS	$49.00	*10521210-54161*	*BACKGROUND & PHYSICALS*	*$49.00*
	809095	FINGERPRINTING	$49.00	*71021150-54161*	*BACKGROUND & PHYSICALS*	*$49.00*
					Vendor Total:	*$98.00*
DONALD A KNIGHT	1668	PLAYGROUND SIGNS	$740.35	*10022100-54100*	*SUPPLIES*	*$740.35*
					Vendor Total:	*$740.35*
E SOURCE COMPANIES LLC	25122	JPA BILLING TRANSITION PROJECT	$8,160.00	*20513300-52100*	*CONTRACTUAL SERVICES*	*$8,160.00*
					Vendor Total:	*$8,160.00*
ECS IMAGING INC	19852	ANNUAL SOFTWARE SUPPORT	$3,727.50	*20012500-54320*	*SOFTWARE*	*$3,727.50*
					Vendor Total:	*$3,727.50*
EFFICIENCY SERVICES GROUP LLC	00024838	ADMIN OF EUD PUBLIC BENEFITS P	$4,038.92	*80626450-52137*	*PUBLIC BENEFITS PROGRAM MGMT*	*$4,038.92*
					Vendor Total:	*$4,038.92*
FLOCK GROUP INC	INV-68601	FLOCK CAMERA LEASE-POLICE-5 YE	$35,000.00	*10020210-54500*	*EQUIP RENTS AND LEASES*	*$35,000.00*
	INV-67833	FLOCK CAMERA SYSTEM	$6,000.00	*10521210-54500*	*EQUIP RENTS AND LEASES*	*$6,000.00*
					Vendor Total:	*$41,000.00*

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FRIEDMANS HOME IMPROVEMENT	INV20362413	BATTERIES, FLAGGING TAPE, S HOOKS, MISC	$405.72	*77725200-56600*	*AIRFIELD MAINTENANCE & REPAIR*	*$405.72*
	INV20420900	LEVITON RECEPTACLE DUPLEX	$8.73	*10521210-56300*	*BUILDING MAINT. & REPAIR*	*$8.73*
	INV20391100	ALL-PURPOSE JOINT COMPOUND	$20.38	*10521210-56300*	*BUILDING MAINT. & REPAIR*	*$20.38*
	INV20421974	FIRE RATED DRYWALL	$28.97	*10521210-56300*	*BUILDING MAINT. & REPAIR*	*$28.97*
	INV20423895	MN-B ROMEX COPPER	$103.74	*10521210-56300*	*BUILDING MAINT. & REPAIR*	*$103.74*
	INV20454602	CARPET TRIM, CARPET ADHESIVE, TROWEL, SCREWS	$100.92	*20824700-56300*	*BUILDING MAINT. & REPAIR*	*$100.92*
	INV20481789	CLAMP CONNECTOR, BUSHING INSERT, CONNECTOR, MISC	$143.01	*20824700-56300*	*BUILDING MAINT. & REPAIR*	*$143.01*
	INV20338900	BARREL BOLT, CANE BOLT	$31.26	*82027111-56300*	*BUILDING MAINT. & REPAIR*	*$31.26*
	INV20382836	1" SLIP PVC UNION SCHEDULE 80, 1-1/2"X10' PVC PIPE	$33.34	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$33.34*
	INV20340834	CORRUGATED UTILITY GALV METAL ROOF	$117.30	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$117.30*
	INV20361593	TOOL AND HAMMER HOLDER, POCKET CADDY, BLOWER	$501.35	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$501.35*
	INV20394762	HOSE SHUT-OFF, HOSE CONNECTOR, WASHERS, RET RING	$19.33	*84027225-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$19.33*
	INV20355199	RATCHETING CARGO BAR, GLOVES, GORILLA SEALANT, MIS	$64.24	*84027225-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$64.24*
	INV20461900	DAP SILICONE WINDOW & DOOR	$29.07	*10521210-56130*	*EXTERNAL SERVICES*	*$29.07*
	INV20465420	AIR NIPPLE, AIR COUPLERS, PLUG & COUPLER	$85.22	*10521210-56130*	*EXTERNAL SERVICES*	*$85.22*
	INV20347648	FERRULE & STOP SET, SWAGE TOOL, CABLE GALV	$75.26	*77725200-56130*	*EXTERNAL SERVICES*	*$75.26*
	INT-089146	FINANCE CHARGE	$10.75	*20013540-54700*	*FINES & PENALTIES*	*$10.75*
	INV20397088	FLAT WASHERS HDG	$12.48	*80126100-80230*	*INFRASTRUCTURE*	*$12.48*
	INV20386447	YELLOW JACKET 50' LIGHTED ENDS	$55.13	*20324100-58510*	*REIMBURSABLE JOBS*	*$55.13*
	INV20456183	AIR HOSE WITH COUPLES	$27.37	*20824300-54102*	*SMALL TOOLS*	*$27.37*
	INV20425751	FURNITURE DOLLY	$87.08	*20824700-54102*	*SMALL TOOLS*	*$87.08*
	INV20459447	WHITEWOOD BOARD, MULTI TOOL HOLDER, MISC	$188.07	*80026200-54102*	*SMALL TOOLS*	*$188.07*
	INV20434342	REDLITHIUM BATTERY, FUEL ROUTER COMPACT TOOL	$509.53	*82027111-54102*	*SMALL TOOLS*	*$509.53*

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FRIEDMANS HOME IMPROVEMENT	INV20470269	PACKOUT, WORK BELT, M18 FUEL BAND SAW, RECIP SAW	$667.66	*82027111-54102*	*SMALL TOOLS*	*$667.66*
	INV20468608	HAMMER DRIVER, CUTTING WHEEL, CHOP BLADE, MISC	$1,352.90	*82027111-54102*	*SMALL TOOLS*	*$1,352.90*
	INV20434272	PLUMBERS KIT, SAWS, SAW BLADES, MISC TOOLS	$2,354.78	*82027111-54102*	*SMALL TOOLS*	*$2,354.78*
	INV20418160	FUEL BRUSHLESS 7 TOOL COMBO KIT, RECIP SAW, MISC	$2,116.53	*84027221-54102*	*SMALL TOOLS*	*$2,116.53*
	INV20375366	AXXESS KEY	$9.22	*10022100-54100*	*SUPPLIES*	*$9.22*
	INV20424155	FLAT WASHERS, HEX BOLTS, HEX NUTS	$12.96	*10022100-54100*	*SUPPLIES*	*$12.96*
	INV20421802	LEVITON SWITCH	$15.85	*10022100-54100*	*SUPPLIES*	*$15.85*
	INV20380513	1"X10' PIPE PVC SCHEDULE 40 PIPE END	$20.59	*10022100-54100*	*SUPPLIES*	*$20.59*
	INV20386609	RUST-OLEUM BLACK SPRAY	$41.86	*10022100-54100*	*SUPPLIES*	*$41.86*
	INV20397183	RUST-OLEUM BROWN & BLACK SPRAY	$95.24	*10022100-54100*	*SUPPLIES*	*$95.24*
	INV20344848	NYLON ROPE, SINGLE PULLEY, SAFETY SNAP	$211.11	*10022100-54100*	*SUPPLIES*	*$211.11*
	INV20340173	DOUG FIR	$7.72	*10022840-54100*	*SUPPLIES*	*$7.72*
	INV20339926	DECK SCREWS, DOUG FIRS	$72.48	*10022840-54100*	*SUPPLIES*	*$72.48*
	INV20464505	CONCRETE MIX	$24.38	*10024620-54100*	*SUPPLIES*	*$24.38*
	CN-704706	RETURN: PHILIPS LED DAYLIGHT BYPASS	($959.46)	*10521210-54100*	*SUPPLIES*	*($959.46)*
	INV20350408	RAISE MUD RING	$10.32	*10521210-54100*	*SUPPLIES*	*$10.32*
	INV20347177	REGULAR DRYWALL FIRE RATED	$27.74	*10521210-54100*	*SUPPLIES*	*$27.74*
	INV20345890	DRYWALL SCREWS, JOINT COMPOUND, WALL TEXTURE, MISC	$126.46	*10521210-54100*	*SUPPLIES*	*$126.46*
	INV20346121	REGULAR DRYWALL	$133.48	*10521210-54100*	*SUPPLIES*	*$133.48*
	INV20446662	PHILIPS LED DAYLIGHT BYPASS	$959.46	*10521210-54100*	*SUPPLIES*	*$959.46*
	INV20389778	BRASS HOSE CONNECTORS	$17.38	*20824300-54100*	*SUPPLIES*	*$17.38*
	INV20389543	BRASS HOSE CONNECTOR, BUSHINGS, 90 DEGREE ELBOW	$44.17	*20824300-54100*	*SUPPLIES*	*$44.17*
	INV20456347	CHEST HANDLE, AA BATTERIES, AAA BATTERIES	$45.89	*20824300-54100*	*SUPPLIES*	*$45.89*
	INV20461995	GORILLA CLEAR GRIP	$12.78	*20824700-54100*	*SUPPLIES*	*$12.78*
	INV20446058	ANT & ROACH BAITS	$21.97	*20824700-54100*	*SUPPLIES*	*$21.97*

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FRIEDMANS HOME IMPROVEMENT	INV20446935	SWIFFER DUSTER KIT, WET CLOTH REFILL, DRY MOP	$53.63	*20824700-54100*	*SUPPLIES*	*$53.63*
	INV20446051	3" CHLORINATING TABLETS	$119.72	*20824700-54100*	*SUPPLIES*	*$119.72*
	INV20437835	BRASS NIPPLE, NEEDLE VALVE, BUCKET	$47.03	*82027111-54100*	*SUPPLIES*	*$47.03*
	INV20437515	GEL FLOOR KNEEPAD, ADUST. WRENCH, BLADES, MISC	$94.57	*82027111-54100*	*SUPPLIES*	*$94.57*
	INV20339035	COUPLING SXS, BUSHING SPXS, BRASS NIPPLES	$40.74	*82027114-54100*	*SUPPLIES*	*$20.37*
				84027221-54100	*SUPPLIES*	*$20.37*
	INV20383903	SLEDGEHAMMER, SANDING DISC, RUBBER PAD, MISC	$122.22	*82027114-54100*	*SUPPLIES*	*$61.11*
				84027221-54100	*SUPPLIES*	*$61.11*
	INV20376156	BATTERIES, THREAD SEALANT, DRILL BITS, MISC	$1,331.98	*82027114-54100*	*SUPPLIES*	*$665.99*
				84027221-54100	*SUPPLIES*	*$665.99*
	INV20418245	M18 FUEL BRUSHLESS 7-TOOL COMBO KIT	$1,848.70	*82027114-54100*	*SUPPLIES*	*$1,848.70*
	INV20380128	RAPIDSET CONCRETE MIX	$81.50	*84027221-54100*	*SUPPLIES*	*$81.50*
	INV20357182	3/4" SLIP PVC UNION	$17.52	*84027225-54100*	*SUPPLIES*	*$17.52*
	INV20288069	CHAPIN BLEACH SPRAYER WITH TIP, MULTI PURPOSE	$76.71	*84027225-54100*	*SUPPLIES*	*$76.71*
					Vendor Total:	*$13,936.04*
GARTON TRACTOR INC	P1868107	FITTING, HOSE	$32.13	*20324100-58510*	*REIMBURSABLE JOBS*	*$32.13*
					Vendor Total:	*$32.13*
GHILOTTI CONSTRUCTION COMPANY INC	6071*22	RECYCLED WATER PROJECT PHASE 4	$677,417.43	*83027330-80230*	*INFRASTRUCTURE*	*$677,417.43*
					Vendor Total:	*$677,417.43*
GOLDEN GATE BRIDGE TOLL	T592593910382	BRIDGE TOLL FEES	$19.25	*10023300-56130*	*EXTERNAL SERVICES*	*$19.25*
	T712589716196	BRIDGE TOLL FEES	$23.00	*10023300-56130*	*EXTERNAL SERVICES*	*$23.00*
					Vendor Total:	*$42.25*
GRAINGER INC	9558032026	THRUST WASHER	$31.60	*84027225-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$31.60*
	9541771326	WHEEL CHOCKS	$428.22	*10621600-54100*	*SUPPLIES*	*$428.22*
	9545397375	LIGHTSTICK, YELLOW	$1,072.39	*10621600-54100*	*SUPPLIES*	*$1,072.39*

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GRAINGER INC	9541983145	AA BATTERIES, FLAGGING TAPE, FIRE EXTINGUISHER	$2,121.83	*10621600-54100*	*SUPPLIES*	*$2,121.83*
					Vendor Total:	*$3,654.04*
GRANITE CONSTRUCTION COMPANY	2971778	GREAT REDWOOD RAIL TRAIL PHASE	$563,975.88	*51124210-80230*	*INFRASTRUCTURE*	*$563,975.88*
					Vendor Total:	*$563,975.88*
GREAT REDWOOD TRAIL AGENCY	2024-385	APPLICATION REVIEW UKIAH B-L PROJECT ENG REV	$75.00	*10024210-52100*	*CONTRACTUAL SERVICES*	*$75.00*
					Vendor Total:	*$75.00*
HANSEL FORD INC	CM1319554	CORE RETURN	($400.00)	*10020210-56300*	*BUILDING MAINT. & REPAIR*	*($400.00)*
	1321544	COIL ASSEMBLY	$152.33	*10020210-56130*	*EXTERNAL SERVICES*	*$152.33*
	1320821	TUBE, BUSHING, PLUNGER, CLEVIS PIN	$112.94	*10024620-56130*	*EXTERNAL SERVICES*	*$112.94*
	1320502	SENDER UNIT	$608.00	*10024620-56130*	*EXTERNAL SERVICES*	*$608.00*
	1321662	FILLER CAP, FILLER HOSE	$176.62	*10621600-56130*	*EXTERNAL SERVICES*	*$176.62*
	1320706	THROTTLE BODY, BOLT, GASKET	$263.65	*82027141-56130*	*EXTERNAL SERVICES*	*$263.65*
	1320936	FILLER	$88.59	*20324100-58510*	*REIMBURSABLE JOBS*	*$88.59*
					Vendor Total:	*$1,002.13*
HD SUPPLY INC	INV00718990	26.4 GPD 150 PSI PD051-832SI LMI SERIES PD0 FEED P	$1,308.28	*95000000-54100*	*SUPPLIES*	*$1,308.28*
					Vendor Total:	*$1,308.28*
HILDEBRAND CONSULTING LLC	738	JOINT WATER UTILITIES RATE STU	$8,000.00	*82027110-52100*	*CONTRACTUAL SERVICES*	*$3,000.00*
				92227400-52100	*CONTRACTUAL SERVICES*	*$2,500.00*
				92727500-52100	*CONTRACTUAL SERVICES*	*$2,500.00*
					Vendor Total:	*$8,000.00*
HOME DEPOT CREDIT SERVICES	2284905	SS CLAMPS	$11.87	*10022700-56300*	*BUILDING MAINT. & REPAIR*	*$11.87*
	3284844	PTFE TAPE, DISHWASHER KITS	$35.13	*10022700-56300*	*BUILDING MAINT. & REPAIR*	*$35.13*
	1192755	RETURN: TAKE HOME SAMPLER	($3.26)	*20824700-56300*	*BUILDING MAINT. & REPAIR*	*($3.26)*
	2035097	LOW VOLTAGE OLD WORK 1G	$5.71	*20824700-56300*	*BUILDING MAINT. & REPAIR*	*$5.71*
	2012150	OUTLET BOX	$7.87	*20824700-56300*	*BUILDING MAINT. & REPAIR*	*$7.87*
	4010603	LOW VOLTAGE OLD WORK 1G	$11.41	*20824700-56300*	*BUILDING MAINT. & REPAIR*	*$11.41*
	4280224	HONEYWELL 5-1-1 DAY PROG TSTAT	$32.76	*20824700-56300*	*BUILDING MAINT. & REPAIR*	*$32.76*

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HOME DEPOT CREDIT SERVICES	2025361	HDMI EXT ADPTR, STEEL SHIP TAPE, GLD PLATED HDMI	$167.55	*20824700-56300*	*BUILDING MAINT. & REPAIR*	*$167.55*
	4280225	HONEYWELL 5-1-1 DAY PROG TSTAT	$10.92	*73022600-56300*	*BUILDING MAINT. & REPAIR*	*$10.92*
	2012192	PVC CONNECTORS	$206.53	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$206.53*
	7070018	ALUMINUM PIPES, NIPPLES, ELBOWS, BUSHINGS, MISC	$223.04	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$223.04*
	3070679	LOCKNUTS, PVC CONNECTOR, TERM ADPTR, MISC	$339.06	*82027111-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$339.06*
	4354670	M12 FUEL NAILER, FASTENERS, 1/4" BRT STRT BRAD	$306.09	*20824300-54102*	*SMALL TOOLS*	*$306.09*
	9034280	GERNERAL PURPOSE BLADES, DEWALT WOOD CHISEL SET	$33.65	*20824700-54102*	*SMALL TOOLS*	*$33.65*
	5033641	M12 BATTERIES, TOUCH LABEL MAKER, LABEL REFILL	$1,238.15	*80026200-54102*	*SMALL TOOLS*	*$1,238.15*
	3900208	M18 BRUSHLESS JIGSAW & STARTER KIT	$325.54	*82027111-54102*	*SMALL TOOLS*	*$325.54*
	3010787	SOCKET ADPTR, BIT HLDR, WIRE STRIPR, SCRWDRVR, MIS	$516.67	*82027111-54102*	*SMALL TOOLS*	*$516.67*
	84135	M18 TOOL COMBO KIT, M18 BATTERIES, HDX, MISC	$792.75	*82027111-54102*	*SMALL TOOLS*	*$792.75*
	3034976	M18 BLOWER	$194.89	*84027225-54102*	*SMALL TOOLS*	*$194.89*
	7034605	DAY CAMP SUPPLIES	$6.50	*10022840-54100*	*SUPPLIES*	*$6.50*
	4032634	3/8" CLAMP, 3/8 CLAMP CONNECTOR, COVER FLAT BLANK	$45.50	*10521210-54100*	*SUPPLIES*	*$45.50*
	24684	BLACK RUBBER CORD	$8.45	*20824700-54100*	*SUPPLIES*	*$8.45*
	7024013	1 GAL SPRAYER, INSECTICIDE, HD INSECT PERIMETER	$23.34	*20824700-54100*	*SUPPLIES*	*$23.34*
	4023496	HMDEFWAND ORTHO HD INSECT KILLER	$35.85	*20824700-54100*	*SUPPLIES*	*$35.85*
	8011453	SS CLAMPS, CONNECTORS, BUTT SPLICE, HEAT SHRINK	$63.35	*20824700-54100*	*SUPPLIES*	*$63.35*
	1012274	KLEAN STRIPPER, FPR FILTERS	$91.11	*20824700-54100*	*SUPPLIES*	*$91.11*
	4014305	SIMPLE GREEN, TOWELS, GLASS SPY ORG	$49.77	*82027111-54100*	*SUPPLIES*	*$49.77*
					Vendor Total:	*$4,780.20*
ICC GENERAL CODE INC	1002098009	FIRE CODE BOOKS	$688.56	*10023300-57100*	*LEARNING AND DEVELOPMENT*	*$688.56*
					Vendor Total:	*$688.56*

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Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
JACK HENRY & ASSOCIATES INC	5001625	JACK HENRY PRODUCT AND SERVICE	$250.00	*20513300-52100*	*CONTRACTUAL SERVICES*	*$250.00*
					Vendor Total:	*$250.00*
JOHN AGUILAR	38595 - 25/28	REIMBURSEMENT: CERT RENEWAL DISTRIBUTION 3 25-28	$90.00	*82027114-57100*	*LEARNING AND DEVELOPMENT*	*$45.00*
				84027221-57100	*LEARNING AND DEVELOPMENT*	*$45.00*
					Vendor Total:	*$90.00*
JOHN'S DAIRY EQUIPMENT & SUPPLY CO INC	SAL4045	SIERRA SANI CHLOR-15 GAL DRUM	$4,442.30	*82000000-10305*	*PRE-PAID OTHER EXPENSES*	*$4,442.30*
	SAL5082	SIERRA SANI-CHLOR-15 GAL DRUM	$4,442.30	*82000000-10305*	*PRE-PAID OTHER EXPENSES*	*$4,442.30*
					Vendor Total:	*$8,884.60*
KEN FOWLER MOTORS INC	52226	CAP	$204.73	*80026110-56130*	*EXTERNAL SERVICES*	*$204.73*
					Vendor Total:	*$204.73*
KP PUBLIC AFFAIRS LLC	7013614	COMMUNITY OUTREACH PROF SVCS	$10,000.00	*20012300-52100*	*CONTRACTUAL SERVICES*	*$10,000.00*
					Vendor Total:	*$10,000.00*
LAKE PARTS INC	392297	ATC-5 FUSE	$7.82	*20824700-56300*	*BUILDING MAINT. & REPAIR*	*$7.82*
	392511	PERFORMANCE TOOL 2 PC TOYOTA A	$15.78	*80026110-56130*	*EXTERNAL SERVICES*	*$15.78*
	393336	OIL FILTER, CAIN AIR FILER, AIR FILTER	$59.66	*82027111-56130*	*EXTERNAL SERVICES*	*$59.66*
	393496	FUEL LINE HOSE	$8.27	*84027225-56130*	*EXTERNAL SERVICES*	*$8.27*
	393502	BARRICADE FUEL LINE HOSE	$12.28	*84027225-56130*	*EXTERNAL SERVICES*	*$12.28*
	391460	HOE FITTINGS, ADAPTERS, CRMP, 8MXTXREEL	$233.53	*84027225-56130*	*EXTERNAL SERVICES*	*$233.53*
	393219	OIL	$3.69	*84027225-56210*	*FUEL & FLUIDS*	*$3.69*
	391954	CLEANER, CLASS SLEANER, ARMORALL, PURPLE POWER	$95.17	*84027221-54100*	*SUPPLIES*	*$95.17*
					Vendor Total:	*$436.20*
LAURENCE THOMPSON	JUL 27	2025 SUNDAYS IN THE PARK AUDIO	$2,400.00	*90000000-23226*	*CONCERT SERIES*	*$2,400.00*
					Vendor Total:	*$2,400.00*
LIFE ASSIST INC	1610628	MISC. EMS SUPPLIES AS NEEDED	$88.80	*10521210-54107*	*EMS SUPPLIES*	*$88.80*
					Vendor Total:	*$88.80*
LYMAN GROUP INC	1960300	STRAW RICE	$203.24	*77725200-54100*	*SUPPLIES*	*$203.24*
					Vendor Total:	*$203.24*

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Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
MARK CLEMENTI PHD	6-15-25FD	PRE-EMPLOYMENT PSYCHOLOGICAL EVALUATION	$844.00	*71021150-54161*	*BACKGROUND & PHYSICALS*	*$844.00*
					Vendor Total:	*$844.00*
MARK DAVIS INSURANCE AGENCY	852592120 FY 25/26	ANNUAL INS RENEWAL: MVCWD	$166.00	*92227400-52521*	*LIABILITY INSURANCE PREMIUM*	*$166.00*
					Vendor Total:	*$166.00*
MARK SPARSO	P-759	REIMBURSEMENT: SEWER LATERAL	$2,000.00	*84427221-59501*	*GRANTS ISSUED*	*$2,000.00*
	P-760	REIMBURSEMENT: SEWER LATERAL	$2,000.00	*84427221-59501*	*GRANTS ISSUED*	*$2,000.00*
					Vendor Total:	*$4,000.00*
MAVERICK NETWORKS, INC	2501558	REMOTE SERVICES T&M	$200.00	*20913910-52100*	*CONTRACTUAL SERVICES*	*$200.00*
	2501583	T&M REMOTE SERVICES	$200.00	*20913910-52100*	*CONTRACTUAL SERVICES*	*$200.00*
					Vendor Total:	*$400.00*
MENDOCINO COUNTY AUDITOR-CONTROLLER	2519	PROPERTY TAX ADMINISTRATION REIMBURSEMENT	$9,767.40	*91521400-59101*	*FEES*	*$9,767.40*
					Vendor Total:	*$9,767.40*
MICHAEL BAKER	P30013	REIMBURSEMENT: PARAMEDIC LICENSE RENEWAL	$250.00	*10521210-57100*	*LEARNING AND DEVELOPMENT*	*$250.00*
					Vendor Total:	*$250.00*
MICHAEL HOOVER	BA FY 25/26	BOOT ALLOWANCE	$156.42	*10023300-54100*	*SUPPLIES*	*$156.42*
					Vendor Total:	*$156.42*
NICK BARBIERI TRUCKING LLC	1219410-IN	CARDLOCK FUEL PURCHASES	$480.69	*10024620-56210*	*FUEL & FLUIDS*	*$480.69*
					Vendor Total:	*$480.69*
NOR-CAL RECYCLED ROCK & AGGREGATES INC	29103	MISC ROCK & ROAD PATCH MATERIAL	$275.99	*82027114-54100*	*SUPPLIES*	*$138.00*
				84027221-54100	*SUPPLIES*	*$137.99*
					Vendor Total:	*$275.99*
OCCU-MED LTD	0725511	PRE-EMPLOYMENT PHYSICALS	$2,164.10	*10020210-54161*	*BACKGROUND & PHYSICALS*	*$770.80*
				20016100-54161	*BACKGROUND & PHYSICALS*	*$242.10*
				71021150-54161	*BACKGROUND & PHYSICALS*	*$1,151.20*
					Vendor Total:	*$2,164.10*
OFFICE DEPOT INC	428957275001	INDEX BLUE, WHITE INDEX	$51.90	*10020210-54100*	*SUPPLIES*	*$51.90*
	428200434001	PENS	$86.01	*10020210-54100*	*SUPPLIES*	*$86.01*

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Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
OFFICE DEPOT INC	426145034001	INK	$94.17	*10020210-54100*	*SUPPLIES*	*$94.17*
	426142413001	INK, TAPE, NOTES	$133.95	*10020210-54100*	*SUPPLIES*	*$133.95*
	426242875001	SHARPIES	$32.16	*20012200-54100*	*SUPPLIES*	*$32.16*
	426242873001	PENS	$32.41	*20012200-54100*	*SUPPLIES*	*$32.41*
	426242874001	PENS	$49.68	*20012200-54100*	*SUPPLIES*	*$49.68*
	428661912001	STORAGE BOXES W/ LID	$61.24	*20012200-54100*	*SUPPLIES*	*$61.24*
	426240563001	PENS	$109.08	*20012200-54100*	*SUPPLIES*	*$109.08*
	422726081001	LABEL, LASER	$75.61	*20012500-54100*	*SUPPLIES*	*$75.61*
					Vendor Total:	*$726.21*
OKONITE COMPANY,THE	2JD70	(C-860) CONDUCTOR CABLE, 15 KV UG AL #1/0 STR EPR,	$64,843.28	*80000000-12104*	*INVENTORY - PURCHASES*	*$64,843.28*
					Vendor Total:	*$64,843.28*
ONLINE INFORMATION SRVS INC	1333880.1	UTILITY EXCHANGE REPORTING FY	($240.16)	*20513300-52100*	*CONTRACTUAL SERVICES*	*($240.16)*
	1333880	UTILITY EXCHANGE REPORTING FY	$281.60	*20513300-52100*	*CONTRACTUAL SERVICES*	*$281.60*
					Vendor Total:	*$41.44*
OPPERMAN & SON INC	01P81985	BULK FUEL, FUEL FILTER	$251.15	*20824700-56130*	*EXTERNAL SERVICES*	*$251.15*
					Vendor Total:	*$251.15*
OWEN EQUIPMENT SALES	00067743	RODDER LINE	$2,266.56	*84027221-56130*	*EXTERNAL SERVICES*	*$2,266.56*
					Vendor Total:	*$2,266.56*
PAMELA WHITAKER	6/10-30/25	INSTRUCTOR	$650.00	*10022850-52100*	*CONTRACTUAL SERVICES*	*$650.00*
					Vendor Total:	*$650.00*
PFM ASSET MANAGEMENT LLC	14829652	FINANCIAL ADVISORY SERVICES	$2,136.05	*20013600-52100*	*CONTRACTUAL SERVICES*	*$2,136.05*
					Vendor Total:	*$2,136.05*
PG&E CO	3822-5 JUN 25	PACIFIC GAS & ELECTRIC	$17,214.27	*84027225-55200*	*PG&E*	*$4,827.63*
				10022100-55210	*UTILITIES*	*$8.11*
				10022300-55210	*UTILITIES*	*$130.31*
				10022700-55210	*UTILITIES*	*$8.11*
				20824700-55210	*UTILITIES*	*$125.13*
				70024500-55210	*UTILITIES*	*$808.61*
				73022600-55210	*UTILITIES*	*$15.63*

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Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
PG&E CO	3822-5 JUN 25	PACIFIC GAS & ELECTRIC	$17,214.27	*73022600-55210*	*UTILITIES*	*$62.65*
				77725200-55210	*UTILITIES*	*$62.66*
				82027111-55210	*UTILITIES*	*$11,077.57*
				84027221-55210	*UTILITIES*	*$87.86*
	1522-8 JUN 25	PACIFIC GAS & ELECTRIC	$184.73	*10521210-55210*	*UTILITIES*	*$55.22*
				10621600-55210	*UTILITIES*	*$43.39*
				71021100-55210	*UTILITIES*	*$43.06*
				71021150-55210	*UTILITIES*	*$43.06*
	6833-2 JUN 25	PACIFIC GAS & ELECTRIC	$998.05	*10521210-55210*	*UTILITIES*	*$298.32*
				10621600-55210	*UTILITIES*	*$234.43*
				71021100-55210	*UTILITIES*	*$232.65*
				71021150-55210	*UTILITIES*	*$232.65*
	6124-2 JUN 25	PACIFIC GAS & ELECTRIC	$1,862.10	*10521210-55210*	*UTILITIES*	*$556.58*
				10621600-55210	*UTILITIES*	*$437.40*
				71021100-55210	*UTILITIES*	*$434.06*
				71021150-55210	*UTILITIES*	*$434.06*
	8716-1 JUN 25	PACIFIC GAS & ELECTRIC	$16,839.82	*82027111-55210*	*UTILITIES*	*$16,839.82*
	7482-8 JUN 25	PACIFIC GAS & ELECTRIC	$1,035.49	*92727510-55210*	*UTILITIES*	*$1,035.49*
	7362-5 JUN 25	PACIFIC GAS & ELECTRIC	$36.25	*92727520-55210*	*UTILITIES*	*$36.25*
	6066-1 JUN 25	PACIFIC GAS & ELECTRIC	$195.27	*92727520-55210*	*UTILITIES*	*$195.27*
	4689-3 JUN 25	PACIFIC GAS & ELECTRIC	$419.27	*92727520-55210*	*UTILITIES*	*$419.27*
	2653-6 JUN 25	PACIFIC GAS & ELECTRIC	$3,433.27	*92727520-55210*	*UTILITIES*	*$3,433.27*
	4919-0 JUN 25	PACIFIC GAS & ELECTRIC	$47,869.93	*92727520-55210*	*UTILITIES*	*$47,869.93*
					Vendor Total:	*$90,088.45*
PUBLIC SERVICE DEPARTMENT	MAY 25	CITY UTILITIES	$262,166.99	*72022400-55211*	*GOLF UTILTIES*	*$43,482.27*
				10022100-55210	*UTILITIES*	*$28,366.48*
				10022300-55210	*UTILITIES*	*$5,804.22*
				10022700-55210	*UTILITIES*	*$4,470.08*
				10024214-55210	*UTILITIES*	*$1,804.58*
				10024620-55210	*UTILITIES*	*$572.06*

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Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
PUBLIC SERVICE DEPARTMENT	MAY 25	CITY UTILITIES	$262,166.99	*20620231-55210*	*UTILITIES*	*$132.55*
				20824300-55210	*UTILITIES*	*$1,635.35*
				20824700-55210	*UTILITIES*	*$28,845.88*
				64020213-55210	*UTILITIES*	*$686.09*
				73022600-55210	*UTILITIES*	*$5,182.15*
				77725200-55210	*UTILITIES*	*$4,114.82*
				80026400-55210	*UTILITIES*	*$2,909.73*
				80526150-55210	*UTILITIES*	*$12,225.53*
				82027111-55210	*UTILITIES*	*$60,203.67*
				83027330-55210	*UTILITIES*	*$17,659.58*
				84027221-55210	*UTILITIES*	*$206.67*
				84027225-55210	*UTILITIES*	*$43,865.28*
	8833.1	CORRECTION TO FY 26	($47,362.69)	*92227400-52115*	*PERFORMANCE AGREEMENTS*	*($11,511.16)*
				92227410-52115	*PERFORMANCE AGREEMENTS*	*($35,851.53)*
	8833.2	CORRECTION TO FY 26	$47,362.69	*92227400-52115*	*PERFORMANCE AGREEMENTS*	*$11,511.16*
				92227410-52115	*PERFORMANCE AGREEMENTS*	*$35,851.53*
	8834.1	CORRECTION TO FY 26	($36,555.94)	*92727500-52115*	*PERFORMANCE AGREEMENTS*	*($3,637.15)*
				92727510-52115	*PERFORMANCE AGREEMENTS*	*($32,918.79)*
	8834.2	CORRECTION TO FY 26	$36,555.94	*92727500-52115*	*PERFORMANCE AGREEMENTS*	*$3,637.15*
				92727510-52115	*PERFORMANCE AGREEMENTS*	*$32,918.79*
	301382-001 MAY 25	WATER SERVICES: 1500 S STATE ST	$148.81	*10521210-55210*	*UTILITIES*	*$104.17*
				10621600-55210	*UTILITIES*	*$44.64*
	99946-001 MAY 25	WATER SERVICES: RVWD	$12,163.60	*92727510-55221*	*WATER*	*$12,163.60*
					Vendor Total:	*$274,479.40*
RADIUS TELEMATICS LLC	INV183436	MONTHLY DATA SERVICES	$180.00	*10020210-52100*	*CONTRACTUAL SERVICES*	*$180.00*
					Vendor Total:	*$180.00*

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Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
RAINBOW AGRICULTURAL SERVICES	81244/H	60" ECONO POOL	$91.42	*10024620-54100*	*SUPPLIES*	*$91.42*
					Vendor Total:	*$91.42*
REDWOOD WASTE SOLUTIONS INC	176980577U039	GARBAGE SERVICES: 141 LOVERS LN	$85.48	*10521210-55210*	*UTILITIES*	*$59.84*
				10621600-55210	*UTILITIES*	*$25.64*
	176980670U039	GARBAGE SERVICES: 1500 S STATE ST	$85.48	*10521210-55210*	*UTILITIES*	*$59.84*
				10621600-55210	*UTILITIES*	*$25.64*
					Vendor Total:	*$170.96*
REEP FIRE PROTECTION INC	3773	FIRE SUPPRESION PD SERVER ROOM	$7,397.25	*20824700-80220*	*BUILDING IMPROVEMENTS*	*$7,397.25*
					Vendor Total:	*$7,397.25*
REMEDIOS NUNEZ	JULY 12, 2025	PARK PLANNING MEETING	$660.00	*90000000-23256*	*SPECIAL EVENTS TRUST*	*$660.00*
					Vendor Total:	*$660.00*
REXEL USA INC	6J02813	WAG LUMINAIRE	$30.18	*84027225-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$30.18*
	6I32824	TFFN-16-BLUE STR	$86.36	*92727520-54100*	*SUPPLIES*	*$86.36*
					Vendor Total:	*$116.54*
RICHARD SCOTT GALLOWAY	JUL 27	BIG BAD VOODOO DADDY 2025 SITP	$7,500.00	*90000000-23226*	*CONCERT SERIES*	*$7,500.00*
					Vendor Total:	*$7,500.00*
RINEHART OIL INC	CL47433	FUEL CARD CHARGES AS NEEDED	$3,962.64	*10020210-56210*	*FUEL & FLUIDS*	*$3,962.64*
	CL47446	FUEL CARD CHARGES AS NEEDED	$159.84	*10023300-56210*	*FUEL & FLUIDS*	*$159.84*
	CL47308	FUEL CARD CHARGES AS NEEDED	$91.71	*10024210-56210*	*FUEL & FLUIDS*	*$91.71*
	CL47451	FUEL CARD CHARGES AS NEEDED	$513.10	*20324100-56210*	*FUEL & FLUIDS*	*$92.95*
				80026400-56210	*FUEL & FLUIDS*	*$420.15*
	CL47452	FUEL CARD CHARGES AS NEEDED	$136.69	*20824700-56210*	*FUEL & FLUIDS*	*$136.69*
	CL47449	FUEL CARD CHARGES AS NEEDED	$187.59	*84027225-56210*	*FUEL & FLUIDS*	*$187.59*
	CL4309	FUEL CARD CHARGES AS NEEDED	$205.39	*84027225-56210*	*FUEL & FLUIDS*	*$205.39*
					Vendor Total:	*$5,256.96*
ROGINA WATER COMPANY	14355-0 JUN 25	WATER SERVICES: 1301 TALMAGE RD	$45.53	*10521210-55100*	*TELEPHONE*	*$13.65*
				10521210-55100	*TELEPHONE*	*$31.88*
					Vendor Total:	*$45.53*

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Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
ROSE MARY MCKENZIE	14683-002 1	ENERGY REBATE	$1,572.00	*80626450-52135*	*ENERGY CONSERVATION PROGRAM*	*$1,572.00*
					Vendor Total:	*$1,572.00*
RYAN N WALLITZ	31725	4X1 LIQUID ACID	$509.40	*10022100-54100*	*SUPPLIES*	*$509.40*
					Vendor Total:	*$509.40*
RYAN NELSON	10015074	REIMBURSEMENT: STATE FIRE TRAINING	$50.00	*10521210-57100*	*LEARNING AND DEVELOPMENT*	*$50.00*
					Vendor Total:	*$50.00*
SANTA ROSA JUNIOR COLLEGE	AR25-01850	REGISTRATION: ALCARON, DEAN, HUFFAKER, HUTCHISON	$143.00	*10521210-57100*	*LEARNING AND DEVELOPMENT*	*$143.00*
					Vendor Total:	*$143.00*
SCP DISTRIBUTORS LLC	SL053302	PESTICIDE	$2,596.04	*92227410-58202*	*CHEMICALS*	*$2,596.04*
					Vendor Total:	*$2,596.04*
SHERI MANNION	27	PAYROLL & HR LUNCHEON MEETING	$91.19	*20016100-54167*	*EMPLOYEE DEVELOPMENT*	*$91.19*
					Vendor Total:	*$91.19*
SOLID WASTES SYSTEMS INC	JUN 25	RESIDENTIAL GARBAGE FEES	$64,468.10	*90200000-52170*	*UKIAH WASTE SOLUTIONS*	*$64,468.10*
					Vendor Total:	*$64,468.10*
SOUTHERN TIRE MART LLC	7740010683	TIRES, TUBES, REPAIRS & LABOR	$198.11	*10020210-56130*	*EXTERNAL SERVICES*	*$198.11*
	7740010690	TIRES, TUBES, REPAIRS & LABOR	$198.11	*10020210-56130*	*EXTERNAL SERVICES*	*$198.11*
	7740010315	TIRES, TUBES, REPAIRS & LABOR	$1,333.97	*10521210-56130*	*EXTERNAL SERVICES*	*$1,333.97*
	7740009905	TIRES, TUBES, REPAIRS & LABOR	$438.04	*10621600-56130*	*EXTERNAL SERVICES*	*$438.04*
	7740010486	TIRES, TUBES, REPAIRS & LABOR	$50.59	*82027111-56130*	*EXTERNAL SERVICES*	*$50.59*
	7740010593	TIRES, TUBES, REPAIRS & LABOR	$1,553.35	*84027221-56130*	*EXTERNAL SERVICES*	*$1,553.35*
	7740010523	TIRES, TUBES, REPAIRS & LABOR	$1,822.10	*84027221-56130*	*EXTERNAL SERVICES*	*$1,822.10*
	7740010308	TIRES, TUBES, REPAIRS & LABOR	$90.00	*20324100-58510*	*REIMBURSABLE JOBS*	*$90.00*
					Vendor Total:	*$5,684.27*
STAPLES CREDIT PLAN	6035219082	ENDTAB FOLDER, PACKING TAPE	$48.96	*10521210-54100*	*SUPPLIES*	*$48.96*
	6035219080	LAMINATING POUCH, POUCHES	$75.30	*10521210-54100*	*SUPPLIES*	*$37.65*
				71021100-54100	*SUPPLIES*	*$37.65*
					Vendor Total:	*$124.26*

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Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
STEVEN RATLEY	2202-24	ARCHITECTURAL SVC & PLANS FOR	$125.00	*80126100-80220*	*BUILDING IMPROVEMENTS*	*$125.00*
					Vendor Total:	*$125.00*
TC BLAIR INC	CG500195	CARPET: HAWAIIAN WATERS	$280.00	*20824700-56300*	*BUILDING MAINT. & REPAIR*	*$280.00*
					Vendor Total:	*$280.00*
TGIF REPAIRS INC	7441	PRINTER MAINTENANCE	$262.50	*20913900-56120*	*EQUIPMENT MAINTENANCE & REPAIR*	*$262.50*
					Vendor Total:	*$262.50*
THURSTON CHEVROLET TOYOTA SCION	366608	PARTS & SERVICE REPAIRS AS NEE	$7.21	*20513382-56130*	*EXTERNAL SERVICES*	*$7.21*
	266446	CLAMP/ PIPING	$3.63	*80026110-56130*	*EXTERNAL SERVICES*	*$3.63*
					Vendor Total:	*$10.84*
THURSTON CHRYSLER DODGE JEEP RAM	27715	RETURN: TUBE HEAT, PURCHASE: HOSE OIL	($13.31)	*10020210-56130*	*EXTERNAL SERVICES*	*($13.31)*
	27804	THERMOSTAT	$79.19	*10020210-56130*	*EXTERNAL SERVICES*	*$79.19*
	27709	TUBE HEAT, GASKET IN	$114.44	*10020210-56130*	*EXTERNAL SERVICES*	*$114.44*
	27697	FILTERS	$228.92	*20324100-58510*	*REIMBURSABLE JOBS*	*$228.92*
					Vendor Total:	*$409.24*
TUFTS POLYGRAPH & INVESTIGATION	2025-1069(A)	POLYGRAPH & INVESTIGATION SERVICES	$1,250.00	*71021150-54161*	*BACKGROUND & PHYSICALS*	*$1,250.00*
					Vendor Total:	*$1,250.00*
TURF STAR INC	INV084775	SENSOR	$271.72	*10022100-56130*	*EXTERNAL SERVICES*	*$271.72*
					Vendor Total:	*$271.72*
UKIAH DAILY JOURNAL	0006900663	PUBLISHING SERVICES	$185.51	*10023100-59101*	*FEES*	*$185.51*
	0006900407	PUBLISHING SERVICES	$284.49	*10023100-59101*	*FEES*	*$284.49*
	0006902561	PUBLISHING SERVICES	$64.63	*10521210-52150*	*LEGAL SERVICES/ EXPENSES*	*$64.63*
	000694728	PUBLISHING SERVICES	$48.75	*20012500-52150*	*LEGAL SERVICES/ EXPENSES*	*$48.75*
	0006901559	PUBLISHING SERVICES	$66.22	*20012500-52150*	*LEGAL SERVICES/ EXPENSES*	*$66.22*
	0006901561	PUBLISHING SERVICES	$78.93	*20012500-52150*	*LEGAL SERVICES/ EXPENSES*	*$78.93*
	0006904002	PUBLISHING SERVICES	$82.11	*20012500-52150*	*LEGAL SERVICES/ EXPENSES*	*$82.11*

List of Checks Presented for Approval on 7/25/2025

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
UKIAH DAILY JOURNAL	0006901329	PUBLISHING SERVICES	$242.59	*20012500-52150*	*LEGAL SERVICES/ EXPENSES*	*$242.59*
					Vendor Total:	*$1,053.23*
UKIAH PAPER SUPPLY	569585	JANITORIAL SUPPLIES, MISC AS NEEDED	$599.58	*10022100-54100*	*SUPPLIES*	*$599.58*
	570016	JANITORIAL SUPPLIES, MISC AS NEEDED	$95.40	*10521210-54100*	*SUPPLIES*	*$95.40*
	569292	JANITORIAL SUPPLIES, MISC AS NEEDED	$159.90	*20824700-54100*	*SUPPLIES*	*$159.90*
	569455	JANITORIAL SUPPLIES, MISC AS NEEDED	$215.40	*20824700-54100*	*SUPPLIES*	*$215.40*
	569950	JANITORIAL SUPPLIES, MISC AS NEEDED	$312.65	*20824700-54100*	*SUPPLIES*	*$312.65*
	570003	JANITORIAL SUPPLIES, MISC AS NEEDED	$52.33	*31122000-54100*	*SUPPLIES*	*$52.33*
	569695	JANITORIAL SUPPLIES, MISC AS NEEDED	$99.95	*31122000-54100*	*SUPPLIES*	*$99.95*
	570146	JANITORIAL SUPPLIES, MISC AS NEEDED	$198.32	*31122000-54100*	*SUPPLIES*	*$198.32*
	569544	JANITORIAL SUPPLIES, MISC AS NEEDED	$567.81	*31122000-54100*	*SUPPLIES*	*$567.81*
	569393	JANITORIAL SUPPLIES, MISC AS NEEDED	$152.37	*71021150-54100*	*SUPPLIES*	*$152.37*
	569472	JANITORIAL SUPPLIES, MISC AS NEEDED	$402.95	*77725200-54100*	*SUPPLIES*	*$402.95*
	569867	JANITORIAL SUPPLIES, MISC AS NEEDED	$31.27	*80026220-54100*	*SUPPLIES*	*$31.27*
	569740	JANITORIAL SUPPLIES, MISC AS NEEDED	$262.59	*80026220-54100*	*SUPPLIES*	*$262.59*
	569837	JANITORIAL SUPPLIES, MISC AS NEEDED	$270.08	*84027225-54100*	*SUPPLIES*	*$270.08*
					Vendor Total:	*$3,420.60*
UKIAH TROPHIES & GIFTS	0002944	ENGRAVING	$169.71	*90000000-23212*	*ADOPT-A-TREE PROGRAM*	*$169.71*
					Vendor Total:	*$169.71*
UKIAH WASTE SOLUTIONS, INC	176969769U034	HAZARD MATERIALS DUMP	$166.53	*10022100-54100*	*SUPPLIES*	*$166.53*
	176969815U034	HAZARD MATERIALS DUMP	$332.00	*84027225-54100*	*SUPPLIES*	*$332.00*
					Vendor Total:	*$498.53*
UNIVAR SOLUTIONS USA INC	53085073	LIQUID SODIUM HYPOCHLORITE 12.	$15,813.83	*84027225-58202*	*CHEMICALS*	*$15,813.83*

List of Checks Presented for Approval on 7/25/2025

Invoices

Vendor Name	Invoice #	Invoice Description	Invoice Amt	Account Detail and Allocation Detail		
UNIVAR SOLUTIONS USA INC	53105912	LIQUID SODIUM HYPOCHLORITE 12.	$16,865.86	*84027225-58202*	*CHEMICALS*	*$16,865.86*
	53053735	LIQUID SODIUM HYPOCHLORITE 12.	$17,187.17	*84027225-58202*	*CHEMICALS*	*$17,187.17*
	53060186	POT PERMANGE FF PL30	$4,410.01	*92727510-58202*	*CHEMICALS*	*$4,410.01*
					Vendor Total:	*$54,276.87*
WILBUR-ELLIS HOLDINGS INC	17096292	MILESTONE	$130.65	*82027111-54100*	*SUPPLIES*	*$130.65*
	17096291	ANTERO EA, GOALTERNDER HERBICIDE, SURMISE	$511.60	*82027111-54100*	*SUPPLIES*	*$511.60*
					Vendor Total:	*$642.25*
XEROX CORP	023920554	COPIER LEASE - SEE ADD'L DESCR	$186.99	*10022700-52100*	*CONTRACTUAL SERVICES*	*$186.99*
	023828924	COPIER LEASE - SEE ADD'L DESCR	$175.92	*73022600-52100*	*CONTRACTUAL SERVICES*	*$175.92*
	023920553	COPIER LEASE - SEE ADD'L DESCR	$157.88	*10020210-54500*	*EQUIP RENTS AND LEASES*	*$110.52*
				20620231-54500	*EQUIP RENTS AND LEASES*	*$31.58*
				64020213-54500	*EQUIP RENTS AND LEASES*	*$15.78*
	023828923	COPIER LEASE - SEE ADD'L DESCR	$689.29	*10020210-54500*	*EQUIP RENTS AND LEASES*	*$482.51*
				20620231-54500	*EQUIP RENTS AND LEASES*	*$137.86*
				64020213-54500	*EQUIP RENTS AND LEASES*	*$68.92*
	023920557	COPIER LEASE - SEE ADD'L DESCR	$164.01	*10521210-54500*	*EQUIP RENTS AND LEASES*	*$164.01*
	023828921	COPIER LEASE - SEE ADD'L DESCR	$458.37	*20012200-54500*	*EQUIP RENTS AND LEASES*	*$458.37*
	023828920	COPIER LEASE - SEE ADD'L DESCR	$486.56	*20012200-54500*	*EQUIP RENTS AND LEASES*	*$486.56*
	023828922	COPIER LEASE - SEE ADD'L DESCR	$793.87	*20012200-54500*	*EQUIP RENTS AND LEASES*	*$793.87*
	023828956	COPIER LEASE - SEE ADD'L DESCR	$325.09	*80026400-54500*	*EQUIP RENTS AND LEASES*	*$325.09*
					Vendor Total:	*$3,437.98*
ZAB ENTERPRISES INC	JUN 25 CC	PROVIDE MISC. FOOD DISHES AS NEEDED	$1,799.80	*73022601-54109*	*CATERING INVENTORY & SERVICES*	*$1,799.80*
					Vendor Total:	*$1,799.80*
					INVOICE TOTAL:	***$2,236,826.95***

TO: Accounts Payable
CC: Mary Horger
FROM: Lauren Ruffin

RE: Payroll & Vendor Checks for Agenda Item
DATE: 07/11/25

FOR PAY DATE OF:	07/11/25		
PAYROLL PERIOD:	06/22/25	TO	07/05/25
PAYROLL CHECK #'s:	518026	TO	518153
PAYROLL STUB #'s:	138130	TO	138510

TOTAL EMPLOYEE CHECKS:	$	91,584.79
TOTAL ACH TRANSACTIONS:	$	812,707.18
SUBTOTAL: PAYROLL CKS & DIRECT DEPOSITS	$	904,291.97
TOTAL VENDOR CHECKS:	$	7,935.58
TOTAL VENDOR EFT PAYMENTS	$	12,325.63
TOTAL EFT PAYMENTS - COU	$	460,883.72
SUBTOTAL: EFT PAYMENTS	$	481,144.93
GRAND TOTAL:	**$**	**1,385,436.90**

REISSUE OF VOID CK OR MANUAL CHECK:

		PAYABLE TO:	
MISC check	518151	$304.45	BRUNELL, JESSIE
	518152	$207.50	MINZOLINI, AXELLE
	518153	$55.41	WHITE, ZOEY

VOID CHECK NO: PAYABLE TO:

TO: Accounts Payable
CC: Mary Horger
FROM: Lauren Ruffin

RE: Payroll & Vendor Checks for Agenda Item
DATE: 07/25/25

FOR PAY DATE OF:	07/25/25		
PAYROLL PERIOD:	07/06/25	TO	07/19/25
PAYROLL CHECK #'s:	518154	TO	518273
PAYROLL STUB #'s:	138511	TO	138894

TOTAL EMPLOYEE CHECKS:	$	98,991.14
TOTAL ACH TRANSACTIONS:	$	820,839.65
SUBTOTAL: PAYROLL CKS & DIRECT DEPOSITS	$	919,830.79
TOTAL VENDOR CHECKS:	$	1,635.58
TOTAL VENDOR EFT PAYMENTS	$	12,077.91
TOTAL EFT PAYMENTS - COU	$	461,560.81
SUBTOTAL: EFT PAYMENTS	$	475,274.30
GRAND TOTAL:	**$**	**1,395,105.09**

REISSUE OF VOID CK OR MANUAL CHECK:

		PAYABLE TO:	
MISC check	518154	$1,619.50	JOHNSON, KAHLI
	518271	$2,523.49	PATTON, JORDAN
	518272	$1,092.95	SELVITELLA, ANTHONY
	518273	$590.90	MACIAS, CAMILA

VOID CHECK NO:

	PAYABLE TO:	
518096	-$590.90	MACIAS, CAMILA

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063390	07/03/2025	PRTD	11541	AT&T	149536	000023557001	06/01/2025		070325	285.94
								CHECK	3063390 TOTAL:	285.94
3063391	07/03/2025	PRTD	11541	AT&T	149538	000023595281	06/10/2025		070325	591.80
								CHECK	3063391 TOTAL:	591.80
3063392	07/03/2025	PRTD	11541	AT&T	149541	000023595677	06/10/2025		070325	4,592.28
								CHECK	3063392 TOTAL:	4,592.28
3063393	07/03/2025	PRTD	11541	AT&T	149542	000023614736	06/13/2025		070325	1,502.62
								CHECK	3063393 TOTAL:	1,502.62
3063394	07/03/2025	PRTD	11541	AT&T	150032	000023409399	05/01/2025		070325	286.21
								CHECK	3063394 TOTAL:	286.21
3063395	07/03/2025	PRTD	11541	AT&T	150033	000023596826	06/10/2025		070325	283.20
								CHECK	3063395 TOTAL:	283.20
3063396	07/03/2025	PRTD	3286	ALICIA TLELO	150036	0040070 1	06/24/2025		070325	204.00
								CHECK	3063396 TOTAL:	204.00
3063397	07/03/2025	PRTD	19160	DONALD KEITH HEWETT	150105	11139	06/07/2025		070325	412.50
								CHECK	3063397 TOTAL:	412.50
3063398	07/03/2025	PRTD	21321	ALLEN JAMES	150037	5/3-5/10/25	06/24/2025		070325	1,085.00
								CHECK	3063398 TOTAL:	1,085.00
3063399	07/03/2025	PRTD	1272	AMAZON CAPITAL SERVI	149598	1WYH-GFFL-LYLC	06/05/2025		070325	338.80
					149599	1CCK-PPJY-W1Y4	06/06/2025		070325	18.50
					149600	1TP9-GGRR-X9K4	06/06/2025		070325	53.76
					149601	1WPL-6PTM-R1R1	06/06/2025		070325	206.76

Report generated: 07/03/2025 11:28
User: mreynolds
Program ID: apcshdsb

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
					149604	1RHP-KV6X-C7QM	06/08/2025		070325	170.08
					149606	1YXF-HYYL-W6YP	06/13/2025		070325	84.14
					149621	19DY-L6J4-9F44	06/08/2025		070325	419.07
					149625	1C69-4C4P-PKFK	06/09/2025		070325	84.36
					149626	17FV-KQX3-LXMH	06/09/2025		070325	273.31
					149627	1HXL-NYMJ-4RQW	06/10/2025		070325	-41.36
					149629	19KM-HCVF-9479	06/11/2025		070325	359.10
					149630	133G-WJH9-DLPQ	06/11/2025		070325	35.68
					150043	17YC-9PVN-LH3M	06/05/2025		070325	437.70
					150057	1DG3-4LVD-3M3J	06/10/2025		070325	797.66
					150058	11LR-YKQY-19VF	06/10/2025		070325	284.32
								CHECK	3063399 TOTAL:	3,521.88
3063400	07/03/2025	PRTD	956	ANIXTER INC	150029	6344701-03	06/11/2025	48787	070325	376.71
					150065	6396555-00	06/11/2025		070325	92.54
					150066	6426011-01	06/11/2025		070325	1,476.51
								CHECK	3063400 TOTAL:	1,945.76
3063401	07/03/2025	PRTD	2275	D WALTER K BARR	149648	9097	06/20/2025		070325	150.00
								CHECK	3063401 TOTAL:	150.00
3063402	07/03/2025	PRTD	3313	BEATRIZ SANCHEZ	150067	0040017	06/24/2025		070325	95.00
								CHECK	3063402 TOTAL:	95.00
3063403	07/03/2025	PRTD	21694	BENJAMIN KATER	150064	1542-2351	06/30/2025		070325	475.00
								CHECK	3063403 TOTAL:	475.00

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063404	07/03/2025	PRTD	1285	COFFEE CRITIC INC, T	150027	R38557	05/23/2025		070325	110.00
							CHECK		3063404 TOTAL:	110.00
3063405	07/03/2025	PRTD	2094	BOUND TREE MEDICAL L	150025	85798281	06/05/2025		070325	297.71
					150026	85815307	06/19/2025		070325	817.56
							CHECK		3063405 TOTAL:	1,115.27
3063406	07/03/2025	PRTD	14067	CAROLLO ENGINEERS IN	150024	FB67761-6	06/12/2025		070325	10,929.00
							CHECK		3063406 TOTAL:	10,929.00
3063407	07/03/2025	PRTD	676	COLANTUONO HIGHSMITH	150069	64287	03/04/2025		070325	390.00
							CHECK		3063407 TOTAL:	390.00
3063408	07/03/2025	PRTD	933	COTTIE LOUISE MORRIS	150020	4/29-6/7/25	06/23/2025		070325	161.87
							CHECK		3063408 TOTAL:	161.87
3063409	07/03/2025	PRTD	15857	DEFATTE EQUIPMENT IN	150015	37980	06/11/2025		070325	1,483.28
							CHECK		3063409 TOTAL:	1,483.28
3063410	07/03/2025	PRTD	17020	FEDERAL EXPRESS	150004	8-899-36117	06/20/2025		070325	30.63
							CHECK		3063410 TOTAL:	30.63
3063411	07/03/2025	PRTD	18142	GHD INC	149998	380-0071693	05/29/2025		070325	4,837.50
					149999	380-0071745	05/29/2025		070325	16,403.98
							CHECK		3063411 TOTAL:	21,241.48
3063412	07/03/2025	PRTD	18533	GRAINGER INC	149994	9535183033	06/10/2025		070325	61.07
					149995	9521935883	05/28/2025		070325	340.00
							CHECK		3063412 TOTAL:	401.07

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063413	07/03/2025	PRTD	18533	GRAINGER INC	149766	9518078168	05/23/2025		070325	74.11
					149767	9532521979	06/06/2025		070325	753.97
							CHECK		3063413 TOTAL:	828.08
3063414	07/03/2025	PRTD	18820	HACH COMPANY	149989	14531163	06/09/2025		070325	211.35
					149990	14475600	04/28/2025		070325	90.80
							CHECK		3063414 TOTAL:	302.15
3063415	07/03/2025	PRTD	1112	HERC RENTALS INC	149987	35631398-001	06/26/2025		070325	135.85
							CHECK		3063415 TOTAL:	135.85
3063416	07/03/2025	PRTD	19614	HOME DEPOT CREDIT SE	150000	6281868	05/15/2025		070325	198.09
					150001	0010841	05/21/2025		070325	280.33
					150002	8011184	05/23/2025		070325	56.52
					150003	8011186	05/23/2025		070325	207.19
					150006	8021539	05/23/2025		070325	278.15
					150008	4011674	05/27/2025		070325	38.30
					150009	3030558	05/28/2025		070325	58.08
					150010	8012511	06/02/2025		070325	1,245.36
					150011	7012586	06/03/2025		070325	51.39
					150012	7075067	06/03/2025		070325	1,051.86
					150013	6012745	06/04/2025		070325	233.59
					150014	6031341	06/04/2025		070325	5.71
					150016	6031382	06/04/2025		070325	634.74
					150017	5012912	06/05/2025		070325	259.45
					150018	4002995	06/06/2025		070325	85.48
					150019	1284243	06/09/2025		070325	60.65

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
					150021	0013584	06/10/2025		070325	57.00
					150022	9013697	06/11/2025		070325	71.06
					150023	9091814	06/11/2025		070325	235.82
					150028	9274655	06/11/2025		070325	15.22
					150030	8284461	06/12/2025		070325	46.99
					150031	6020878	05/15/2025		070325	210.56
								CHECK	3063416 TOTAL:	5,381.54
3063417	07/03/2025	PRTD	21000	IRVINE & JACHENS INC	150112	4991	06/27/2025		070325	3,063.50
								CHECK	3063417 TOTAL:	3,063.50
3063418	07/03/2025	PRTD	2996	JACINTO WALTERS AUTO	149982	0003312	06/10/2025		070325	165.00
								CHECK	3063418 TOTAL:	165.00
3063419	07/03/2025	PRTD	1868	JAMES THOMSEN	149957	BA FY 24/25	06/27/2025		070325	177.98
								CHECK	3063419 TOTAL:	177.98
3063420	07/03/2025	PRTD	3308	JASON BLACK	149974	BA FY 24/25	06/23/2025		070325	420.62
								CHECK	3063420 TOTAL:	420.62
3063421	07/03/2025	PRTD	163	JOE FOWLER	149980	BA FY 24/25 1	06/24/2025		070325	185.08
								CHECK	3063421 TOTAL:	185.08
3063422	07/03/2025	PRTD	3187	JOHN'S DAIRY EQUIPME	149979	SAL4588	06/26/2025		070325	1,480.77
								CHECK	3063422 TOTAL:	1,480.77
3063423	07/03/2025	PRTD	3300	KACIE MCGEHEE	149978	0039017	06/23/2025		070325	119.00
								CHECK	3063423 TOTAL:	119.00

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063424	07/03/2025	PRTD	22662	KAREN LEE	149977	4/29-6/7/25	06/23/2025		070325	356.13
							CHECK		3063424 TOTAL:	356.13
3063425	07/03/2025	PRTD	3298	LAUREN KAIN	149969	0039318	06/23/2025		070325	70.00
							CHECK		3063425 TOTAL:	70.00
3063426	07/03/2025	PRTD	2785	PHILIP ANDREW WILLIA	150072	175	06/02/2025		070325	9,052.50
					150073	176	06/02/2025		070325	15,250.00
							CHECK		3063426 TOTAL:	24,302.50
3063427	07/03/2025	PRTD	22557	LAWRENCE & ASSOCIATE	149970	30785	05/20/2025		070325	1,141.25
							CHECK		3063427 TOTAL:	1,141.25
3063428	07/03/2025	PRTD	14487	MARK CLEMENTI PHD	149986	06-01-25PD	06/01/2025		070325	1,688.00
							CHECK		3063428 TOTAL:	1,688.00
3063429	07/03/2025	PRTD	40529	MELINDA WALLS	150041	FY 25/26	07/02/2025		070325	5,054.74
							CHECK		3063429 TOTAL:	5,054.74
3063430	07/03/2025	PRTD	24153	AIR QUALITY MANAGEME	150056	2859 FY 24/25	05/27/2025		070325	539.21
							CHECK		3063430 TOTAL:	539.21
3063431	07/03/2025	PRTD	24225	MAJOR CRIMES TASK FO	150042	JUNE 3, 2025	06/03/2025		070325	4,500.00
							CHECK		3063431 TOTAL:	4,500.00
3063432	07/03/2025	PRTD	25360	MOTION INDUSTRIES IN	149607	CA23-00552499	06/06/2025		070325	621.96
							CHECK		3063432 TOTAL:	621.96
3063433	07/03/2025	PRTD	175	MUNICIPAL EMERGENCY	149988	IN2264934	05/20/2025	48815	070325	1,683.46
					149991	IN2265897	05/21/2025	48815	070325	3,412.47

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
							CHECK		3063433 TOTAL:	5,095.93
3063434	07/03/2025	PRTD	274	NOR-CAL RECYCLED ROC	149633	28984	06/11/2025		070325	957.20
					149634	28849	06/04/2025		070325	412.77
					149636	28930	06/04/2025		070325	992.45
							CHECK		3063434 TOTAL:	2,362.42
3063435	07/03/2025	PRTD	11930	PACE SUPPLY CORPORAT	150070	0210564843	06/24/2025		070325	305.67
					150071	0210570824	06/25/2025		070325	23.52
							CHECK		3063435 TOTAL:	329.19
3063436	07/03/2025	PRTD	3218	PAYTON MANTOOTH	148043	TA 6/16-27/25	05/14/2025		070325	207.00
							CHECK		3063436 TOTAL:	207.00
3063437	07/03/2025	PRTD	1167	PLAZA PAINT INC	150074	NNAN3	05/08/2025		070325	357.83
							CHECK		3063437 TOTAL:	357.83
3063438	07/03/2025	PRTD	29100	RAINBOW AGRICULTURAL	150075	79382/H	04/14/2025		070325	116.19
							CHECK		3063438 TOTAL:	116.19
3063439	07/03/2025	PRTD	29995	NICK BARBIERI TRUCKI	149832	1214229-IN	06/09/2025	48827	070325	15,033.18
							CHECK		3063439 TOTAL:	15,033.18
3063440	07/03/2025	PRTD	30842	RINEHART OIL INC	150077	CL47187	05/31/2025		070325	1,830.59
							CHECK		3063440 TOTAL:	1,830.59
3063441	07/03/2025	PRTD	2861	RYAN MATTHEW JACKSON	150083	062725	06/27/2025		070325	3,625.00
							CHECK		3063441 TOTAL:	3,625.00
3063442	07/03/2025	PRTD	2020	SCOTT NORCROSS	150079	ba fy 24/25	06/19/2025		070325	280.89

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
								CHECK	3063442 TOTAL:	280.89
3063443	07/03/2025	PRTD	33559	SCOTT SHAVER	150080	TR 4/7-11/25	06/19/2025		070325	690.20
								CHECK	3063443 TOTAL:	690.20
3063444	07/03/2025	PRTD	3217	SHANE BAARTS	148104	TA 6/16-27/25	05/14/2025		070325	207.00
								CHECK	3063444 TOTAL:	207.00
3063445	07/03/2025	PRTD	3208	THE SHERWIN-WILLIAMS	150084	1742-1	06/10/2025		070325	2,875.39
								CHECK	3063445 TOTAL:	2,875.39
3063446	07/03/2025	PRTD	3304	SHIRLEY JOHNSON	150085	270-AHIFT2025002701	06/17/2025		070325	242.89
								CHECK	3063446 TOTAL:	242.89
3063447	07/03/2025	PRTD	39010	SOLID WASTES SYSTEMS	150086	5113	05/31/2025		070325	410.37
								CHECK	3063447 TOTAL:	410.37
3063448	07/03/2025	PRTD	1583	RAY C STARKEY	150087	P-2500494	06/13/2025		070325	122.50
								CHECK	3063448 TOTAL:	122.50
3063449	07/03/2025	PRTD	15984	DEPARTMENT OF JUSTIC	150089	815850	05/05/2025		070325	32.00
					150090	821091	06/04/2025		070325	370.00
								CHECK	3063449 TOTAL:	402.00
3063450	07/03/2025	PRTD	35295	STATE CONTROLLER'S O	150088	FTB-00008149	05/07/2025		070325	76.76
								CHECK	3063450 TOTAL:	76.76
3063451	07/03/2025	PRTD	2188	COLLEEN HOLLY HUNT	150092	02589	06/03/2025		070325	4,225.25
								CHECK	3063451 TOTAL:	4,225.25

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063452	07/03/2025	PRTD	218	SUSAN JANSSEN	150093	JUNE 26, 2025	06/26/2025		070325	300.00
							CHECK		3063452 TOTAL:	300.00
3063453	07/03/2025	PRTD	2709	FOREST WAYNE HUNT	150094	3150	06/07/2025		070325	350.00
							CHECK		3063453 TOTAL:	350.00
3063454	07/03/2025	PRTD	36662	TRITECH SOFTWARE SYS	150096	439106	05/30/2025	48860	070325	31,175.38
							CHECK		3063454 TOTAL:	31,175.38
3063455	07/03/2025	PRTD	36862	TUFTS POLYGRAPH & IN	150098	2025-1058(A)	06/20/2025		070325	1,250.00
					150099	2025-1062(A)	06/20/2025		070325	1,250.00
					150100	2025-1064(A)	06/30/2025		070325	1,250.00
							CHECK		3063455 TOTAL:	3,750.00
3063456	07/03/2025	PRTD	37590	UKIAH DAILY JOURNAL	150101	0006894811	05/08/2025		070325	467.11
					150102	0006894713	05/10/2025		070325	301.56
					150103	0006896201	05/15/2025		070325	457.09
					150104	0006897315	05/22/2025		070325	209.40
							CHECK		3063456 TOTAL:	1,435.16
3063457	07/03/2025	PRTD	59	UKIAH WASTE SOLUTION	150106	176876417U034	06/01/2025		070325	12,832.42
							CHECK		3063457 TOTAL:	12,832.42
3063458	07/03/2025	PRTD	577	UNITED SITE SERVICES	150107	114-14076734	06/10/2025		070325	873.41
							CHECK		3063458 TOTAL:	873.41
3063459	07/03/2025	PRTD	40303	VERIZON WIRELESS	150108	6116455708	06/19/2025		070325	698.18
							CHECK		3063459 TOTAL:	698.18

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063460	07/03/2025	PRTD	981	BRIDGES RESTORATION	150110	SI-02243	06/30/2025		070325	557.63
								CHECK	3063460 TOTAL:	557.63
3063461	07/03/2025	PRTD	594	WEST YOST ASSOCIATES	150109	2063483	05/31/2025		070325	52,798.11
								CHECK	3063461 TOTAL:	52,798.11
3063462	07/03/2025	PRTD	1100	WORLD OIL ENVIRONMEN	149762	I500-01228928	06/11/2025		070325	8.00
					149763	I500-01229529	06/12/2025		070325	153.00
								CHECK	3063462 TOTAL:	161.00
3063463	07/03/2025	PRTD	41042	WESTERN RENEWABLE EN	149761	WR51833	06/10/2025		070325	5.12
								CHECK	3063463 TOTAL:	5.12
3063464	07/03/2025	PRTD	39870	WYATT IRRIGATION CO	149753	339164 01	06/10/2025		070325	20.40
					149759	550858 01	06/10/2025		070325	1,452.96
								CHECK	3063464 TOTAL:	1,473.36
3063465	07/03/2025	PRTD	2675	ZOEY WHITE	150111	6/24-26/25	06/27/2025		070325	4,267.29
								CHECK	3063465 TOTAL:	4,267.29
						NUMBER OF CHECKS 76			*** CASH ACCOUNT TOTAL ***	250,994.79

	COUNT	AMOUNT
TOTAL PRINTED CHECKS	76	250,994.79

*** GRAND TOTAL *** 250,994.79

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED
CLERK: mreynolds

YEAR PER JNL SRC ACCOUNT / EFF DATE	JNL DESC	REF 1	REF 2	REF 3	ACCOUNT DESC / LINE DESC	T	OB	DEBIT	CREDIT
2026 1 11									
APP 10000000-20100					ACCOUNTS PAYABLE			44,496.98	
07/03/2025 070325		070325			AP CASH DISBURSEMENTS JOURNAL				
APP 99999999-10100					US BANK CHECKING				250,994.79
07/03/2025 070325		070325			AP CASH DISBURSEMENTS JOURNAL				
APP 20600000-20100					ACCOUNTS PAYABLE			16,154.91	
07/03/2025 070325		070325			AP CASH DISBURSEMENTS JOURNAL				
APP 20900000-20100					ACCOUNTS PAYABLE			11,001.90	
07/03/2025 070325		070325			AP CASH DISBURSEMENTS JOURNAL				
APP 92200000-20100					ACCOUNTS PAYABLE			795.77	
07/03/2025 070325		070325			AP CASH DISBURSEMENTS JOURNAL				
APP 82000000-20100					ACCOUNTS PAYABLE			43,337.41	
07/03/2025 070325		070325			AP CASH DISBURSEMENTS JOURNAL				
APP 84000000-20100					ACCOUNTS PAYABLE			28,388.98	
07/03/2025 070325		070325			AP CASH DISBURSEMENTS JOURNAL				
APP 80000000-20100					ACCOUNTS PAYABLE			3,736.47	
07/03/2025 070325		070325			AP CASH DISBURSEMENTS JOURNAL				
APP 20500000-20100					ACCOUNTS PAYABLE			206.76	
07/03/2025 070325		070325			AP CASH DISBURSEMENTS JOURNAL				
APP 71000000-20100					ACCOUNTS PAYABLE			5,054.64	
07/03/2025 070325		070325			AP CASH DISBURSEMENTS JOURNAL				
APP 10500000-20100					ACCOUNTS PAYABLE			3,675.06	
07/03/2025 070325		070325			AP CASH DISBURSEMENTS JOURNAL				
APP 20000000-20100					ACCOUNTS PAYABLE			1,334.20	
07/03/2025 070325		070325			AP CASH DISBURSEMENTS JOURNAL				
APP 84400000-20100					ACCOUNTS PAYABLE			390.00	
07/03/2025 070325		070325			AP CASH DISBURSEMENTS JOURNAL				
APP 20800000-20100					ACCOUNTS PAYABLE			1,880.26	
07/03/2025 070325		070325			AP CASH DISBURSEMENTS JOURNAL				
APP 51100000-20100					ACCOUNTS PAYABLE			4,837.50	
07/03/2025 070325		070325			AP CASH DISBURSEMENTS JOURNAL				
APP 82200000-20100					ACCOUNTS PAYABLE			16,403.98	
07/03/2025 070325		070325			AP CASH DISBURSEMENTS JOURNAL				
APP 83000000-20100					ACCOUNTS PAYABLE			38.30	
07/03/2025 070325		070325			AP CASH DISBURSEMENTS JOURNAL				
APP 10600000-20100					ACCOUNTS PAYABLE			7,235.48	
07/03/2025 070325		070325			AP CASH DISBURSEMENTS JOURNAL				
APP 73000000-20100					ACCOUNTS PAYABLE			320.89	
07/03/2025 070325		070325			AP CASH DISBURSEMENTS JOURNAL				
APP 70000000-20100					ACCOUNTS PAYABLE			1,150.75	
07/03/2025 070325		070325			AP CASH DISBURSEMENTS JOURNAL				
APP 77700000-20100					ACCOUNTS PAYABLE			5,134.76	
07/03/2025 070325		070325			AP CASH DISBURSEMENTS JOURNAL				
APP 92700000-20100					ACCOUNTS PAYABLE			628.75	
07/03/2025 070325		070325			AP CASH DISBURSEMENTS JOURNAL				
APP 93200000-20100					ACCOUNTS PAYABLE			805.46	
07/03/2025 070325		070325			AP CASH DISBURSEMENTS JOURNAL				
APP 69600000-20100					ACCOUNTS PAYABLE			76.30	

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

YEAR PER JNL SRC ACCOUNT / EFF DATE	JNL DESC	REF 1	REF 2	REF 3	ACCOUNT DESC / LINE DESC	T	OB	DEBIT	CREDIT
07/03/2025	070325	070325			AP CASH DISBURSEMENTS JOURNAL				
APP 64000000-20100					ACCOUNTS PAYABLE			76.76	
07/03/2025	070325	070325			AP CASH DISBURSEMENTS JOURNAL				
APP 90000000-20100					ACCOUNTS PAYABLE			873.41	
07/03/2025	070325	070325			AP CASH DISBURSEMENTS JOURNAL				
APP 91100000-20100					ACCOUNTS PAYABLE			52,798.11	
07/03/2025	070325	070325			AP CASH DISBURSEMENTS JOURNAL				
APP 20300000-20100					ACCOUNTS PAYABLE			161.00	
07/03/2025	070325	070325			AP CASH DISBURSEMENTS JOURNAL				
					GENERAL LEDGER TOTAL			250,994.79	250,994.79
APP 99999999-99100					CASH DUE TO FUND 100			44,496.98	
07/03/2025	070325	070325							
APP 10000000-10101					POOLED CASH				44,496.98
07/03/2025	070325	070325							
APP 99999999-99206					CASH DUE TO FUND 206			16,154.91	
07/03/2025	070325	070325							
APP 20600000-10101					POOLED CASH				16,154.91
07/03/2025	070325	070325							
APP 99999999-99209					CASH DUE TO FUND 209			11,001.90	
07/03/2025	070325	070325							
APP 20900000-10101					POOLED CASH				11,001.90
07/03/2025	070325	070325							
APP 99999999-99922					CASH DUE TO FUND 922			795.77	
07/03/2025	070325	070325							
APP 92200000-10101					POOLED CASH				795.77
07/03/2025	070325	070325							
APP 99999999-99820					CASH DUE TO FUND 820			43,337.41	
07/03/2025	070325	070325							
APP 82000000-10101					POOLED CASH				43,337.41
07/03/2025	070325	070325							
APP 99999999-99840					CASH DUE TO FUND 840			28,388.98	
07/03/2025	070325	070325							
APP 84000000-10101					POOLED CASH				28,388.98
07/03/2025	070325	070325							
APP 99999999-99800					CASH DUE TO FUND 800			3,736.47	
07/03/2025	070325	070325							
APP 80000000-10101					POOLED CASH				3,736.47
07/03/2025	070325	070325							
APP 99999999-99205					CASH DUE TO FUND 205			206.76	
07/03/2025	070325	070325							
APP 20500000-10101					POOLED CASH				206.76
07/03/2025	070325	070325							
APP 99999999-99710					CASH DUE TO FUND 710			5,054.64	
07/03/2025	070325	070325							
APP 71000000-10101					POOLED CASH				5,054.64
07/03/2025	070325	070325							

Report generated: 07/03/2025 11:28
User: mreynolds
Program ID: apcshdsb

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

YEAR PER JNL SRC ACCOUNT / EFF DATE	JNL DESC	REF 1	REF 2	REF 3	ACCOUNT DESC / LINE DESC	T	OB	DEBIT	CREDIT
APP 99999999-99105					CASH DUE TO FUND 105			3,675.06	
07/03/2025	070325	070325							
APP 10500000-10101					POOLED CASH				3,675.06
07/03/2025	070325	070325							
APP 99999999-99200					CASH DUE TO FUND 200			1,334.20	
07/03/2025	070325	070325							
APP 20000000-10101					POOLED CASH				1,334.20
07/03/2025	070325	070325							
APP 99999999-99844					CASH DUE TO FUND 844			390.00	
07/03/2025	070325	070325							
APP 84400000-10101					POOLED CASH				390.00
07/03/2025	070325	070325							
APP 99999999-99208					CASH DUE TO FUND 208			1,880.26	
07/03/2025	070325	070325							
APP 20800000-10101					POOLED CASH				1,880.26
07/03/2025	070325	070325							
APP 99999999-99511					CASH DUE TO FUND 511			4,837.50	
07/03/2025	070325	070325							
APP 51100000-10101					POOLED CASH				4,837.50
07/03/2025	070325	070325							
APP 99999999-99822					CASH DUE TO FUND 822			16,403.98	
07/03/2025	070325	070325							
APP 82200000-10101					POOLED CASH				16,403.98
07/03/2025	070325	070325							
APP 99999999-99830					CASH DUE TO FUND 830			38.30	
07/03/2025	070325	070325							
APP 83000000-10101					POOLED CASH				38.30
07/03/2025	070325	070325							
APP 99999999-99106					CASH DUE TO FUND 106			7,235.48	
07/03/2025	070325	070325							
APP 10600000-10101					POOLED CASH				7,235.48
07/03/2025	070325	070325							
APP 99999999-99730					CASH DUE TO FUND 730			320.89	
07/03/2025	070325	070325							
APP 73000000-10101					POOLED CASH				320.89
07/03/2025	070325	070325							
APP 99999999-99700					CASH DUE TO FUND 700			1,150.75	
07/03/2025	070325	070325							
APP 70000000-10101					POOLED CASH				1,150.75
07/03/2025	070325	070325							
APP 99999999-99777					CASH DUE TO FUND 777			5,134.76	
07/03/2025	070325	070325							
APP 77700000-10101					POOLED CASH				5,134.76
07/03/2025	070325	070325							
APP 99999999-99927					CASH DUE TO FUND 927			628.75	
07/03/2025	070325	070325							
APP 92700000-10101					POOLED CASH				628.75
07/03/2025	070325	070325							
APP 99999999-99932					CASH DUE TO FUND 932			805.46	

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

YEAR PER JNL SRC ACCOUNT	EFF DATE	JNL DESC	REF 1	REF 2	REF 3	ACCOUNT DESC / LINE DESC	T	OB	DEBIT	CREDIT
	07/03/2025	070325	070325							
APP 93200000-10101	07/03/2025	070325	070325			POOLED CASH				805.46
APP 99999999-99696	07/03/2025	070325	070325			CASH DUE TO FUND 696			76.30	
APP 69600000-10101	07/03/2025	070325	070325			POOLED CASH				76.30
APP 99999999-99640	07/03/2025	070325	070325			CASH DUE TO FUND 640			76.76	
APP 64000000-10101	07/03/2025	070325	070325			POOLED CASH				76.76
APP 99999999-99900	07/03/2025	070325	070325			CASH DUE TO FUND 900			873.41	
APP 90000000-10101	07/03/2025	070325	070325			POOLED CASH				873.41
APP 99999999-99911	07/03/2025	070325	070325			CASH DUE TO FUND 911			52,798.11	
APP 91100000-10101	07/03/2025	070325	070325			POOLED CASH				52,798.11
APP 99999999-99203	07/03/2025	070325	070325			CASH DUE TO FUND 203			161.00	
APP 20300000-10101	07/03/2025	070325	070325			POOLED CASH				161.00
						SYSTEM GENERATED ENTRIES TOTAL			250,994.79	250,994.79
						JOURNAL 2026/01/11 TOTAL			501,989.58	501,989.58

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND / ACCOUNT	YEAR	PER	JNL	EFF DATE	ACCOUNT DESCRIPTION		DEBIT	CREDIT
100 GENERAL FUND	2026	1	11	07/03/2025				
10000000-10101					POOLED CASH			44,496.98
10000000-20100					ACCOUNTS PAYABLE		44,496.98	
						FUND TOTAL	44,496.98	44,496.98
105 GF-(SUBFUND) FIRE AUTHORITY	2026	1	11	07/03/2025				
10500000-10101					POOLED CASH			3,675.06
10500000-20100					ACCOUNTS PAYABLE		3,675.06	
						FUND TOTAL	3,675.06	3,675.06
106 USDA FOREST SERV CWDG	2026	1	11	07/03/2025				
10600000-10101					POOLED CASH			7,235.48
10600000-20100					ACCOUNTS PAYABLE		7,235.48	
						FUND TOTAL	7,235.48	7,235.48
200 CITY ADMINISTRATIVE SERVICES	2026	1	11	07/03/2025				
20000000-10101					POOLED CASH			1,334.20
20000000-20100					ACCOUNTS PAYABLE		1,334.20	
						FUND TOTAL	1,334.20	1,334.20
203 GARAGE FUND	2026	1	11	07/03/2025				
20300000-10101					POOLED CASH			161.00
20300000-20100					ACCOUNTS PAYABLE		161.00	
						FUND TOTAL	161.00	161.00
205 BILLING AND COLLECTION FUND	2026	1	11	07/03/2025				
20500000-10101					POOLED CASH			206.76
20500000-20100					ACCOUNTS PAYABLE		206.76	
						FUND TOTAL	206.76	206.76
206 PUBLIC SAFETY DISPATCH FUND	2026	1	11	07/03/2025				
20600000-10101					POOLED CASH			16,154.91
20600000-20100					ACCOUNTS PAYABLE		16,154.91	
						FUND TOTAL	16,154.91	16,154.91
208 BUILDING & GROUNDS MAINTENANCE	2026	1	11	07/03/2025				
20800000-10101					POOLED CASH			1,880.26
20800000-20100					ACCOUNTS PAYABLE		1,880.26	
						FUND TOTAL	1,880.26	1,880.26
209 IT FUND	2026	1	11	07/03/2025				

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND / ACCOUNT	YEAR	PER	JNL	EFF DATE	ACCOUNT DESCRIPTION		DEBIT	CREDIT
20900000-10101					POOLED CASH			11,001.90
20900000-20100					ACCOUNTS PAYABLE		11,001.90	
						FUND TOTAL	11,001.90	11,001.90
511 RAIL TRAIL FUND	2026	1	11	07/03/2025				
51100000-10101					POOLED CASH			4,837.50
51100000-20100					ACCOUNTS PAYABLE		4,837.50	
						FUND TOTAL	4,837.50	4,837.50
640 PARKING DISTRICT	2026	1	11	07/03/2025				
64000000-10101					POOLED CASH			76.76
64000000-20100					ACCOUNTS PAYABLE		76.76	
						FUND TOTAL	76.76	76.76
696 SOLID WASTE MITIGATION FUND	2026	1	11	07/03/2025				
69600000-10101					POOLED CASH			76.30
69600000-20100					ACCOUNTS PAYABLE		76.30	
						FUND TOTAL	76.30	76.30
700 SANITARY DISPOSAL SITE FUND	2026	1	11	07/03/2025				
70000000-10101					POOLED CASH			1,150.75
70000000-20100					ACCOUNTS PAYABLE		1,150.75	
						FUND TOTAL	1,150.75	1,150.75
710 AMBULANCE SERVICES FUND	2026	1	11	07/03/2025				
71000000-10101					POOLED CASH			5,054.64
71000000-20100					ACCOUNTS PAYABLE		5,054.64	
						FUND TOTAL	5,054.64	5,054.64
730 CONFERENCE CENTER FUND	2026	1	11	07/03/2025				
73000000-10101					POOLED CASH			320.89
73000000-20100					ACCOUNTS PAYABLE		320.89	
						FUND TOTAL	320.89	320.89
777 AIRPORT FUND	2026	1	11	07/03/2025				
77700000-10101					POOLED CASH			5,134.76
77700000-20100					ACCOUNTS PAYABLE		5,134.76	
						FUND TOTAL	5,134.76	5,134.76
800 ELECTRIC FUND	2026	1	11	07/03/2025				
80000000-10101					POOLED CASH			3,736.47

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND / ACCOUNT	YEAR	PER	JNL	EFF DATE	ACCOUNT DESCRIPTION		DEBIT	CREDIT
80000000-20100					ACCOUNTS PAYABLE		3,736.47	
						FUND TOTAL	3,736.47	3,736.47
820 WATER FUND	2026	1	11	07/03/2025				
82000000-10101					POOLED CASH			43,337.41
82000000-20100					ACCOUNTS PAYABLE		43,337.41	
						FUND TOTAL	43,337.41	43,337.41
822 WATER CONNECTION FEE FUND (CAP	2026	1	11	07/03/2025				
82200000-10101					POOLED CASH			16,403.98
82200000-20100					ACCOUNTS PAYABLE		16,403.98	
						FUND TOTAL	16,403.98	16,403.98
830 RECYCLED WATER FUND	2026	1	11	07/03/2025				
83000000-10101					POOLED CASH			38.30
83000000-20100					ACCOUNTS PAYABLE		38.30	
						FUND TOTAL	38.30	38.30
840 CITY SEWER OPERATIONS FUN	2026	1	11	07/03/2025				
84000000-10101					POOLED CASH			28,388.98
84000000-20100					ACCOUNTS PAYABLE		28,388.98	
						FUND TOTAL	28,388.98	28,388.98
844 CITY SEWER CAPITAL PROJECTS FU	2026	1	11	07/03/2025				
84400000-10101					POOLED CASH			390.00
84400000-20100					ACCOUNTS PAYABLE		390.00	
						FUND TOTAL	390.00	390.00
900 SPECIAL DEPOSIT TRUST FUND	2026	1	11	07/03/2025				
90000000-10101					POOLED CASH			873.41
90000000-20100					ACCOUNTS PAYABLE		873.41	
						FUND TOTAL	873.41	873.41
911 RUSSIAN RIVER WATERSHED ASSOC	2026	1	11	07/03/2025				
91100000-10101					POOLED CASH			52,798.11
91100000-20100					ACCOUNTS PAYABLE		52,798.11	
						FUND TOTAL	52,798.11	52,798.11
922 MILLVIEW COUNTY WATER DISTRICT	2026	1	11	07/03/2025				
92200000-10101					POOLED CASH			795.77
92200000-20100					ACCOUNTS PAYABLE		795.77	

A/P CASH DISBURSEMENTS JOURNAL
JOURNAL ENTRIES TO BE CREATED

FUND / ACCOUNT	YEAR	PER	JNL	EFF DATE	ACCOUNT DESCRIPTION	DEBIT	CREDIT
					FUND TOTAL	795.77	795.77
927 REDWOOD VALLEY WATER DISTR	2026	1	11	07/03/2025			
92700000-10101					POOLED CASH		628.75
92700000-20100					ACCOUNTS PAYABLE	628.75	
					FUND TOTAL	628.75	628.75
932 WILLOW WATER DISTRICT OPERAT	2026	1	11	07/03/2025			
93200000-10101					POOLED CASH		805.46
93200000-20100					ACCOUNTS PAYABLE	805.46	
					FUND TOTAL	805.46	805.46
999 POOLED CASH FUND	2026	1	11	07/03/2025			
99999999-10100					US BANK CHECKING		250,994.79
99999999-99100					CASH DUE TO FUND 100	44,496.98	
99999999-99105					CASH DUE TO FUND 105	3,675.06	
99999999-99106					CASH DUE TO FUND 106	7,235.48	
99999999-99200					CASH DUE TO FUND 200	1,334.20	
99999999-99203					CASH DUE TO FUND 203	161.00	
99999999-99205					CASH DUE TO FUND 205	206.76	
99999999-99206					CASH DUE TO FUND 206	16,154.91	
99999999-99208					CASH DUE TO FUND 208	1,880.26	
99999999-99209					CASH DUE TO FUND 209	11,001.90	
99999999-99511					CASH DUE TO FUND 511	4,837.50	
99999999-99640					CASH DUE TO FUND 640	76.76	
99999999-99696					CASH DUE TO FUND 696	76.30	
99999999-99700					CASH DUE TO FUND 700	1,150.75	
99999999-99710					CASH DUE TO FUND 710	5,054.64	
99999999-99730					CASH DUE TO FUND 730	320.89	
99999999-99777					CASH DUE TO FUND 777	5,134.76	
99999999-99800					CASH DUE TO FUND 800	3,736.47	
99999999-99820					CASH DUE TO FUND 820	43,337.41	
99999999-99822					CASH DUE TO FUND 822	16,403.98	
99999999-99830					CASH DUE TO FUND 830	38.30	
99999999-99840					CASH DUE TO FUND 840	28,388.98	
99999999-99844					CASH DUE TO FUND 844	390.00	
99999999-99900					CASH DUE TO FUND 900	873.41	
99999999-99911					CASH DUE TO FUND 911	52,798.11	
99999999-99922					CASH DUE TO FUND 922	795.77	
99999999-99927					CASH DUE TO FUND 927	628.75	
99999999-99932					CASH DUE TO FUND 932	805.46	
					FUND TOTAL	250,994.79	250,994.79

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND		DUE TO	DUE FR
100	GENERAL FUND		44,496.98
105	GF-(SUBFUND) FIRE AUTHORITY		3,675.06
106	USDA FOREST SERV CWDG		7,235.48
200	CITY ADMINISTRATIVE SERVICES		1,334.20
203	GARAGE FUND		161.00
205	BILLING AND COLLECTION FUND		206.76
206	PUBLIC SAFETY DISPATCH FUND		16,154.91
208	BUILDING & GROUNDS MAINTENANCE		1,880.26
209	IT FUND		11,001.90
511	RAIL TRAIL FUND		4,837.50
640	PARKING DISTRICT		76.76
696	SOLID WASTE MITIGATION FUND		76.30
700	SANITARY DISPOSAL SITE FUND		1,150.75
710	AMBULANCE SERVICES FUND		5,054.64
730	CONFERENCE CENTER FUND		320.89
777	AIRPORT FUND		5,134.76
800	ELECTRIC FUND		3,736.47
820	WATER FUND		43,337.41
822	WATER CONNECTION FEE FUND (CAP		16,403.98
830	RECYCLED WATER FUND		38.30
840	CITY SEWER OPERATIONS FUN		28,388.98
844	CITY SEWER CAPITAL PROJECTS FU		390.00
900	SPECIAL DEPOSIT TRUST FUND		873.41
911	RUSSIAN RIVER WATERSHED ASSOC		52,798.11
922	MILLVIEW COUNTY WATER DISTRICT		795.77
927	REDWOOD VALLEY WATER DISTR		628.75
932	WILLOW WATER DISTRICT OPERAT		805.46
999	POOLED CASH FUND	250,994.79	
	TOTAL	250,994.79	250,994.79

** END OF REPORT - Generated by MaryJo Reynolds **

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063466	07/11/2025	PRTD	11546	AT&T	150292	2799 JUL 25	06/22/2025		071125	124.86
								CHECK	3063466 TOTAL:	124.86
3063467	07/11/2025	PRTD	11544	AT&T	150296	3138 JUN 25	06/25/2025		071125	251.45
								CHECK	3063467 TOTAL:	251.45
3063468	07/11/2025	PRTD	3316	AC&R SERVICES INC	150120	M25000070	05/21/2025		071125	185.16
								CHECK	3063468 TOTAL:	185.16
3063469	07/11/2025	PRTD	10522	ALL-GUARD ALARM SYST	150299	A488653	07/01/2025		071125	93.44
								CHECK	3063469 TOTAL:	93.44
3063470	07/11/2025	PRTD	19160	DONALD KEITH HEWETT	150119	106175	06/10/2025		071125	375.00
								CHECK	3063470 TOTAL:	375.00
3063471	07/11/2025	PRTD	1272	AMAZON CAPITAL SERVI	150059	1H91-RMQ4-TM63	06/13/2025		071125	3.63
					150060	1H1W-7Q6N-LVMN	06/16/2025		071125	158.40
					150061	1WNN-9FW9-Q4CH	06/16/2025		071125	97.98
					150155	1G3H-79X1-M7FP	06/05/2025		071125	357.14
					150157	1HVL-CDD4-QPKQ	06/09/2025		071125	76.16
					150158	1PCH-6JHT-KKR1	06/09/2025		071125	255.86
					150160	1RXK-C3FV-GGQC	06/09/2025		071125	115.85
					150162	14MH-XCDY-NNWX	06/12/2025		071125	892.50
					150163	1HDY-VLFM-3NXY	06/13/2025		071125	81.65
					150166	17VJ-WVKF-WK66	06/13/2025		071125	30.47
					150171	1WFV-RV67-RCX7	06/13/2025		071125	582.95
					150172	1YXF-HYYL-WCFV	06/13/2025		071125	155.00
					150174	119H-KPTV-N7C3	06/16/2025		071125	1,753.98
					150175	146X-3JHC-VXKJ	06/17/2025		071125	598.80

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
					150305	1MDV-4KJG-CRKR	06/02/2025		071125	985.86
					150307	1VXX-CTD4-961W	06/14/2025		071125	51.93
					150309	1NV4-VTRP-LHJH	06/16/2025		071125	20.09
					150311	1KKF-QHVX-WMYD	06/17/2025		071125	48.92
								CHECK	3063471 TOTAL:	6,267.17
3063472	07/11/2025	PRTD	1548	AMWINS GROUP BENEFIT	150182	9012198	07/01/2025		071125	3,898.74
								CHECK	3063472 TOTAL:	3,898.74
3063473	07/11/2025	PRTD	3312	ANNETTE MAKINO	150188	0038305	06/30/2025		071125	250.00
								CHECK	3063473 TOTAL:	250.00
3063474	07/11/2025	PRTD	32541	LORELEI SCOTT	150353	13950	06/17/2025		071125	1,019.14
								CHECK	3063474 TOTAL:	1,019.14
3063475	07/11/2025	PRTD	2418	BKF ENGINEERS INC	149649	25060876	06/20/2025		071125	280.00
								CHECK	3063475 TOTAL:	280.00
3063476	07/11/2025	PRTD	1285	COFFEE CRITIC INC, T	149656	R38848	06/18/2025		071125	170.00
								CHECK	3063476 TOTAL:	170.00
3063477	07/11/2025	PRTD	3141	BONNIE LORENZI	150320	1/13/25	01/13/2025		071125	375.00
								CHECK	3063477 TOTAL:	375.00
3063478	07/11/2025	PRTD	14067	CAROLLO ENGINEERS IN	150326	FB67792	06/12/2025		071125	94,332.50
								CHECK	3063478 TOTAL:	94,332.50
3063479	07/11/2025	PRTD	3321	CAROLYN WELCH	150336	0038675	07/02/2025		071125	250.00
								CHECK	3063479 TOTAL:	250.00

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063480	07/11/2025	PRTD	18658	CARTER GRISSOM	150169	JUL 13	07/01/2025		071125	500.00
								CHECK	3063480 TOTAL:	500.00
3063481	07/11/2025	PRTD	14588	COMPUTER OPTIONS INC	149684	INV08270	06/17/2025	48806	071125	4,750.00
								CHECK	3063481 TOTAL:	4,750.00
3063482	07/11/2025	PRTD	2041	COPQUEST INC	150282	C25768439	06/20/2025		071125	453.41
								CHECK	3063482 TOTAL:	453.41
3063483	07/11/2025	PRTD	29220	DAVID RAPPORT	150347	7755	07/01/2025		071125	32,378.84
								CHECK	3063483 TOTAL:	32,378.84
3063484	07/11/2025	PRTD	252	DC CUSTOMS INC	149685	201976	06/17/2025		071125	140.00
					149686	202008	06/19/2025		071125	1,251.31
								CHECK	3063484 TOTAL:	1,391.31
3063485	07/11/2025	PRTD	15857	DEFATTE EQUIPMENT IN	150281	37953	06/18/2025		071125	1,034.31
								CHECK	3063485 TOTAL:	1,034.31
3063486	07/11/2025	PRTD	2615	DONALD PHILLIPS HILL	150280	JUL 25	07/03/2025		071125	1,537.00
								CHECK	3063486 TOTAL:	1,537.00
3063487	07/11/2025	PRTD	3129	ENERGEA REDWOOD LLC	150342	18	06/16/2025		071125	1,637.76
								CHECK	3063487 TOTAL:	1,637.76
3063488	07/11/2025	PRTD	38535	EUREKA OXYGEN	150268	482731	06/25/2025		071125	1,378.54
					150345	482660	06/11/2025		071125	73.00
								CHECK	3063488 TOTAL:	1,451.54

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063489	07/11/2025	PRTD	17003	FASTENAL	150266	CAROH89925	05/22/2025		071125	104.89
								CHECK	3063489 TOTAL:	104.89
3063490	07/11/2025	PRTD	192	VIOLATION PROCESSING	150260	T712586432499	02/05/2025		071125	26.00
								CHECK	3063490 TOTAL:	26.00
3063491	07/11/2025	PRTD	192	INVOICE PROCESSING D	150264	I712528037257	06/17/2025		071125	8.00
								CHECK	3063491 TOTAL:	8.00
3063492	07/11/2025	PRTD	17020	FEDERAL EXPRESS	150255	8-914-65841	07/04/2025		071125	204.92
								CHECK	3063492 TOTAL:	204.92
3063493	07/11/2025	PRTD	17352	FLEETPRIDE	150242	126636838	06/19/2025		071125	245.72
								CHECK	3063493 TOTAL:	245.72
3063494	07/11/2025	PRTD	258	GAYNOR TELESYSTEMS I	150259	SWA2897	05/30/2025		071125	1,393.70
								CHECK	3063494 TOTAL:	1,393.70
3063495	07/11/2025	PRTD	1988	GEORGINA FETH-MICHEL	150156	LAPTOP	06/27/2025		071125	60.88
								CHECK	3063495 TOTAL:	60.88
3063496	07/11/2025	PRTD	1438	GHILOTTI CONSTRUCTIO	150168	6095*15	06/30/2025		071125	1,590,762.12
								CHECK	3063496 TOTAL:	1,590,762.12
3063497	07/11/2025	PRTD	18624	GINA GRECO	150236	6/12/25	06/12/2025		071125	91.00
								CHECK	3063497 TOTAL:	91.00
3063498	07/11/2025	PRTD	18462	GOLDEN STATE RISK	150241	INV-004470	07/01/2025		071125	21,562.13
								CHECK	3063498 TOTAL:	21,562.13

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063499	07/11/2025	PRTD	18533	GRAINGER INC	149997	9528300396	06/03/2025		071125	135.73
							CHECK		3063499 TOTAL:	135.73
3063500	07/11/2025	PRTD	18533	GRAINGER INC	149770	9542979225	06/17/2025		071125	214.54
							CHECK		3063500 TOTAL:	214.54
3063501	07/11/2025	PRTD	3188	HAPPY CYCLING LLC	150212	64156	07/01/2025		071125	115.00
							CHECK		3063501 TOTAL:	115.00
3063502	07/11/2025	PRTD	3237	MYERS & SONS HI-WAY	150205	172613	06/06/2025	48819	071125	1,821.48
							CHECK		3063502 TOTAL:	1,821.48
3063503	07/11/2025	PRTD	1768	HILDEBRAND CONSULTIN	150209	731	05/30/2025		071125	5,250.00
					150210	714	04/02/2025		071125	4,000.00
							CHECK		3063503 TOTAL:	9,250.00
3063504	07/11/2025	PRTD	19614	HOME DEPOT CREDIT SE	150240	8031577	04/16/2025		071125	62.71
					150244	5072964	04/16/2025		071125	27.14
					150245	7281744	05/14/2025		071125	38.07
					150246	74459	05/21/2025		071125	140.50
					150247	1012148	05/30/2025		071125	31.24
							CHECK		3063504 TOTAL:	299.66
3063505	07/11/2025	PRTD	986	INFOSEND INC	150204	288225	05/31/2025		071125	5,293.26
							CHECK		3063505 TOTAL:	5,293.26
3063506	07/11/2025	PRTD	3310	JAMES C CARLSON	150203	P-758	06/29/2025		071125	2,000.00
							CHECK		3063506 TOTAL:	2,000.00

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063507	07/11/2025	PRTD	3309	JANET ROSEN	150202	0039561	06/26/2025		071125	150.00
								CHECK	3063507 TOTAL:	150.00
3063508	07/11/2025	PRTD	3306	JOAQUIN WILLIAM MCWH	150164	JUL 13	07/01/2025		071125	2,075.00
								CHECK	3063508 TOTAL:	2,075.00
3063509	07/11/2025	PRTD	2629	JOHNSONS CUSTOM LAND	149824	16808	06/30/2025		071125	665.00
					149825	16827	06/30/2025		071125	350.00
								CHECK	3063509 TOTAL:	1,015.00
3063510	07/11/2025	PRTD	28168	KAREN POPLAWSKI	150201	6/3-25/25	06/25/2025		071125	210.00
								CHECK	3063510 TOTAL:	210.00
3063511	07/11/2025	PRTD	1037	TIM HOLMES	150200	UKIAH-2507	06/30/2025		071125	1,260.00
								CHECK	3063511 TOTAL:	1,260.00
3063512	07/11/2025	PRTD	27906	KEVIN PIERACHINI	150199	BA FY 24/25	06/30/2025		071125	174.15
								CHECK	3063512 TOTAL:	174.15
3063513	07/11/2025	PRTD	2897	KIRBY CONSTRUCTION C	150258	250300	04/01/2025		071125	15,385.29
								CHECK	3063513 TOTAL:	15,385.29
3063514	07/11/2025	PRTD	22179	LACO ASSOCIATES	149973	54052	06/13/2025		071125	7,732.50
								CHECK	3063514 TOTAL:	7,732.50
3063515	07/11/2025	PRTD	36115	LAURENCE THOMPSON	150170	JUL 13	07/01/2025		071125	2,400.00
								CHECK	3063515 TOTAL:	2,400.00
3063516	07/11/2025	PRTD	2785	PHILIP ANDREW WILLIA	150348	182	07/08/2025		071125	3,780.00
					150349	183	07/08/2025		071125	17,537.50

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
								CHECK	3063516 TOTAL:	21,317.50
3063517	07/11/2025	PRTD	22557	LAWRENCE & ASSOCIATE	150194	30829	06/18/2025		071125	612.50
								CHECK	3063517 TOTAL:	612.50
3063518	07/11/2025	PRTD	22610	LEAGUE OF CALIFORNIA	149965	1837	05/16/2025		071125	280.00
								CHECK	3063518 TOTAL:	280.00
3063519	07/11/2025	PRTD	1380	LEXIPOL LLC	150193	INVLEX11253791	07/01/2025		071125	1,138.12
								CHECK	3063519 TOTAL:	1,138.12
3063520	07/11/2025	PRTD	22829	LIEBERT CASSIDY WHIT	150351	292823	03/31/2025		071125	580.00
								CHECK	3063520 TOTAL:	580.00
3063521	07/11/2025	PRTD	22850	LIFE ASSIST INC	149962	1611263	06/19/2025		071125	622.77
					149963	1609876	06/16/2025		071125	596.29
								CHECK	3063521 TOTAL:	1,219.06
3063522	07/11/2025	PRTD	22970	SCP DISTRIBUTORS LLC	149961	NX403065	04/15/2025		071125	118.35
								CHECK	3063522 TOTAL:	118.35
3063523	07/11/2025	PRTD	17846	MARCUS FREEMAN	150286	BA FY 25/26	07/09/2025		071125	300.00
								CHECK	3063523 TOTAL:	300.00
3063524	07/11/2025	PRTD	19190	MARK HILLIKER	150165	APR-JUN 25	06/30/2025		071125	300.00
					150167	JAN-MAR 25	04/01/2025		071125	300.00
								CHECK	3063524 TOTAL:	600.00
3063525	07/11/2025	PRTD	19637	MARY HORGER	150285	TR 5/10-14/25	06/27/2025		071125	449.20
								CHECK	3063525 TOTAL:	449.20

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063526	07/11/2025	PRTD	41794	MATHESON TRI-GAS INC	150189	0031675184	06/21/2025		071125	67.25
							CHECK		3063526 TOTAL:	67.25
3063527	07/11/2025	PRTD	23962	MCMASTER-CARR SUPPLY	150173	47420321	06/17/2025		071125	972.01
							CHECK		3063527 TOTAL:	972.01
3063528	07/11/2025	PRTD	24170	MENDOCINO COUNTY AUD	150287	2504	06/30/2025		071125	19,126.83
					150288	2508	06/30/2025		071125	288.98
							CHECK		3063528 TOTAL:	19,415.81
3063529	07/11/2025	PRTD	24829	MILSOFT UTILITY SOLU	150289	20254709	07/01/2025		071125	3,423.37
							CHECK		3063529 TOTAL:	3,423.37
3063530	07/11/2025	PRTD	25913	MYERS MEDICAL PHARMA	150218	659658	07/01/2025		071125	249.95
							CHECK		3063530 TOTAL:	249.95
3063531	07/11/2025	PRTD	3317	NANETTE WILSON	150181	0040472	06/18/2025		071125	140.00
							CHECK		3063531 TOTAL:	140.00
3063532	07/11/2025	PRTD	1708	GOVERNMENTJOBS.COM I	150290	INV-138309	06/11/2025	48868	071125	7,259.25
							CHECK		3063532 TOTAL:	7,259.25
3063533	07/11/2025	PRTD	274	NOR-CAL RECYCLED ROC	150187	28838	06/03/2025		071125	138.45
							CHECK		3063533 TOTAL:	138.45
3063534	07/11/2025	PRTD	26728	ONESOURCE DISTRIBUTO	150220	S007933537.001	06/03/2025	48835	071125	5,918.97
							CHECK		3063534 TOTAL:	5,918.97
3063535	07/11/2025	PRTD	11930	PACE SUPPLY CORPORAT	150225	0210508029	06/18/2025		071125	4,356.07
					150226	0210434270	05/27/2025		071125	3,124.49

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
					150227	0210414484	06/02/2025		071125	2,210.04
					150228	0210572452	06/25/2025		071125	2,383.91
					150229	0210565907	06/24/2025		071125	468.78
					150249	0210517042	06/13/2025		071125	107.88
								CHECK	3063535 TOTAL:	12,651.17
3063536	07/11/2025	PRTD	2757	PASTPERFECT SOFTWARE	150248	2025PPWE-43424	05/13/2025		071125	696.00
								CHECK	3063536 TOTAL:	696.00
3063537	07/11/2025	PRTD	3174	UNITED TACTICAL SYST	150337	0098002-IN	06/10/2025	48770	071125	4,072.15
								CHECK	3063537 TOTAL:	4,072.15
3063538	07/11/2025	PRTD	27260	PG&E CO	150256	7075-1 JUN 25	07/02/2025		071125	4.21
								CHECK	3063538 TOTAL:	4.21
3063539	07/11/2025	PRTD	28000	PITNEY BOWES GLOBAL	150257	1027590565	06/09/2025		071125	567.45
								CHECK	3063539 TOTAL:	567.45
3063540	07/11/2025	PRTD	1167	PLAZA PAINT INC	150261	2KDNL	05/09/2025		071125	72.62
					150294	D2A6Y	06/06/2025		071125	394.01
								CHECK	3063540 TOTAL:	466.63
3063541	07/11/2025	PRTD	28075	POLYDYNE INC	150262	1931420	05/27/2025		071125	9,689.88
								CHECK	3063541 TOTAL:	9,689.88
3063542	07/11/2025	PRTD	2449	RADIOMOBILE INC	150263	250079	06/13/2025	48847	071125	11,599.00
								CHECK	3063542 TOTAL:	11,599.00
3063543	07/11/2025	PRTD	29995	NICK BARBIERI TRUCKI	150265	1216582-IN	06/19/2025		071125	838.77

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
								CHECK	3063543 TOTAL:	838.77
3063544	07/11/2025	PRTD	29810	REDWOOD TOXICOLOGY L	150267	00169820255	05/31/2025		071125	73.55
								CHECK	3063544 TOTAL:	73.55
3063545	07/11/2025	PRTD	3282	RENEE CHAMP	150206	JUL 13	07/01/2025		071125	1,200.00
								CHECK	3063545 TOTAL:	1,200.00
3063546	07/11/2025	PRTD	30842	RINEHART OIL INC	150207	CL47162	05/31/2025		071125	495.96
					150273	CL47291	06/15/2025		071125	2,278.68
					150274	CL47306	06/15/2025		071125	148.54
					150275	CL47292	06/15/2025		071125	4,432.83
					150276	CL47307	06/15/2025		071125	252.39
					150277	CL47310	06/15/2025		071125	810.12
					150278	CL47313	06/15/2025		071125	976.55
					150279	CL47314	06/15/2025		071125	1,650.73
					150295	CL47281	06/15/2025		071125	317.47
					150297	CL47311	06/15/2025		071125	287.98
					150300	CL47312	06/15/2025		071125	256.69
								CHECK	3063546 TOTAL:	11,907.94
3063547	07/11/2025	PRTD	31640	SAFEWAY INC	150283	JUN 25	06/28/2025		071125	39.49
								CHECK	3063547 TOTAL:	39.49
3063548	07/11/2025	PRTD	31876	SAGE SANGIACOMO	150284	JUL 8, 25	07/08/2025		071125	400.00
								CHECK	3063548 TOTAL:	400.00
3063549	07/11/2025	PRTD	3217	SHANE BAARTS	150301	TA 6/30-7/11/25	07/01/2025		071125	184.00

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
								CHECK	3063549 TOTAL:	184.00
3063550	07/11/2025	PRTD	40703	SHARON WEDEGAERTNER	150302	6/1-30/25	07/01/2025		071125	1,310.40
								CHECK	3063550 TOTAL:	1,310.40
3063551	07/11/2025	PRTD	34605	A DIVISION OF IDSC H	150303	ARV/64964247	06/13/2025		071125	55.36
								CHECK	3063551 TOTAL:	55.36
3063552	07/11/2025	PRTD	39010	SOLID WASTES SYSTEMS	150308	5259	06/30/2025		071125	254.02
								CHECK	3063552 TOTAL:	254.02
3063553	07/11/2025	PRTD	288	295 GROUP LLC	150310	6.20.25	06/20/2025		071125	2,994.00
								CHECK	3063553 TOTAL:	2,994.00
3063554	07/11/2025	PRTD	1583	RAY C STARKEY	150312	P-2500507	06/10/2025		071125	22.32
								CHECK	3063554 TOTAL:	22.32
3063555	07/11/2025	PRTD	2575	STEVENSON SUPPLY AND	150313	2506166	06/05/2025		071125	656.52
					150314	2506534	06/12/2025		071125	1,045.20
								CHECK	3063555 TOTAL:	1,701.72
3063556	07/11/2025	PRTD	2408	SWIFTCOMPLY US OPCO	150315	INV-10230	05/01/2025		071125	3,780.00
								CHECK	3063556 TOTAL:	3,780.00
3063557	07/11/2025	PRTD	280	STATE WATER RESOURCE	150316	43834 FY 25-26	07/01/2025		071125	55.00
								CHECK	3063557 TOTAL:	55.00
3063558	07/11/2025	PRTD	3277	TO THE POINT POLYGRA	150317	643	06/10/2025		071125	4,310.80
								CHECK	3063558 TOTAL:	4,310.80

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063559	07/11/2025	PRTD	3302	TOBIAS ROBERTS	150319	0040094	06/24/2025		071125	100.00
								CHECK	3063559 TOTAL:	100.00
3063560	07/11/2025	PRTD	3173	TRI-CITIES ANSWERING	150321	872007012025	07/01/2025		071125	94.00
								CHECK	3063560 TOTAL:	94.00
3063561	07/11/2025	PRTD	36862	TUFTS POLYGRAPH & IN	150323	2025-1052(A)	07/01/2025		071125	1,250.00
								CHECK	3063561 TOTAL:	1,250.00
3063562	07/11/2025	PRTD	38530	UKIAH PAPER SUPPLY	150328	568105	05/13/2025		071125	81.04
					150329	568723	06/03/2025		071125	86.16
					150330	568905	06/10/2025		071125	750.97
					150331	568888	06/10/2025		071125	166.37
								CHECK	3063562 TOTAL:	1,084.54
3063563	07/11/2025	PRTD	31040	UKIAH ROUND TREE GLA	150332	32715	06/03/2025		071125	375.00
								CHECK	3063563 TOTAL:	375.00
3063564	07/11/2025	PRTD	39043	UKIAH TROPHIES & GIF	150333	0002937	06/12/2025		071125	1,028.87
					150334	0002928	06/12/2025		071125	253.68
								CHECK	3063564 TOTAL:	1,282.55
3063565	07/11/2025	PRTD	577	UNITED SITE SERVICES	150335	114-14084356	06/24/2025		071125	873.41
					150350	INV-5433140	06/30/2025		071125	157.39
								CHECK	3063565 TOTAL:	1,030.80
3063566	07/11/2025	PRTD	39798	HD SUPPLY INC	150338	INV00737318	06/12/2025		071125	685.92
								CHECK	3063566 TOTAL:	685.92

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063567	07/11/2025	PRTD	40537	CAPITAL ONE NA	150341	08960	05/21/2025		071125	65.13
								CHECK	3063567 TOTAL:	65.13
3063568	07/11/2025	PRTD	41720	WILLOW COUNTY WATER	150343	10010 JUN 25	06/19/2025		071125	46.82
					150344	40353 JUN 25	06/19/2025		071125	140.41
					150346	81154 JUN 25	06/19/2025		071125	139.96
								CHECK	3063568 TOTAL:	327.19
3063569	07/11/2025	PRTD	1100	WORLD OIL ENVIRONMEN	149764	I500-01230884	06/18/2025		071125	103.00
								CHECK	3063569 TOTAL:	103.00
3063570	07/11/2025	PRTD	39870	WYATT IRRIGATION CO	149755	339563 01	06/18/2025		071125	369.57
					149756	339743 01	06/20/2025		071125	27.17
					149760	339418 01	06/16/2025		071125	15.19
								CHECK	3063570 TOTAL:	411.93
						NUMBER OF CHECKS 105			*** CASH ACCOUNT TOTAL ***	1,956,881.31

	COUNT	AMOUNT
TOTAL PRINTED CHECKS	105	1,956,881.31

*** GRAND TOTAL *** 1,956,881.31

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

CLERK: mreynolds

YEAR PER JNL / SRC ACCOUNT / EFF DATE	JNL DESC	REF 1	REF 2	REF 3	ACCOUNT DESC / LINE DESC	T OB	DEBIT	CREDIT
2026 1 59								
APP 10000000-20100					ACCOUNTS PAYABLE		24,929.98	
07/11/2025 071125	071125				AP CASH DISBURSEMENTS JOURNAL			
APP 99999999-10100					US BANK CHECKING			1,956,881.31
07/11/2025 071125	071125				AP CASH DISBURSEMENTS JOURNAL			
APP 20600000-20100					ACCOUNTS PAYABLE		251.45	
07/11/2025 071125	071125				AP CASH DISBURSEMENTS JOURNAL			
APP 90000000-20100					ACCOUNTS PAYABLE		7,644.66	
07/11/2025 071125	071125				AP CASH DISBURSEMENTS JOURNAL			
APP 31500000-20100					ACCOUNTS PAYABLE		22.53	
07/11/2025 071125	071125				AP CASH DISBURSEMENTS JOURNAL			
APP 84000000-20100					ACCOUNTS PAYABLE		21,699.95	
07/11/2025 071125	071125				AP CASH DISBURSEMENTS JOURNAL			
APP 82000000-20100					ACCOUNTS PAYABLE		40,414.60	
07/11/2025 071125	071125				AP CASH DISBURSEMENTS JOURNAL			
APP 20000000-20100					ACCOUNTS PAYABLE		51,189.35	
07/11/2025 071125	071125				AP CASH DISBURSEMENTS JOURNAL			
APP 20700000-20100					ACCOUNTS PAYABLE		3,898.74	
07/11/2025 071125	071125				AP CASH DISBURSEMENTS JOURNAL			
APP 80100000-20100					ACCOUNTS PAYABLE		17,664.43	
07/11/2025 071125	071125				AP CASH DISBURSEMENTS JOURNAL			
APP 25200000-20100					ACCOUNTS PAYABLE		489,625.26	
07/11/2025 071125	071125				AP CASH DISBURSEMENTS JOURNAL			
APP 73000000-20100					ACCOUNTS PAYABLE		336.37	
07/11/2025 071125	071125				AP CASH DISBURSEMENTS JOURNAL			
APP 83000000-20100					ACCOUNTS PAYABLE		94,332.50	
07/11/2025 071125	071125				AP CASH DISBURSEMENTS JOURNAL			
APP 20900000-20100					ACCOUNTS PAYABLE		6,143.70	
07/11/2025 071125	071125				AP CASH DISBURSEMENTS JOURNAL			
APP 10500000-20100					ACCOUNTS PAYABLE		23,796.62	
07/11/2025 071125	071125				AP CASH DISBURSEMENTS JOURNAL			
APP 80000000-20100					ACCOUNTS PAYABLE		12,344.16	
07/11/2025 071125	071125				AP CASH DISBURSEMENTS JOURNAL			
APP 77700000-20100					ACCOUNTS PAYABLE		1,324.64	
07/11/2025 071125	071125				AP CASH DISBURSEMENTS JOURNAL			
APP 20300000-20100					ACCOUNTS PAYABLE		3,121.12	
07/11/2025 071125	071125				AP CASH DISBURSEMENTS JOURNAL			
APP 92700000-20100					ACCOUNTS PAYABLE		11,143.19	
07/11/2025 071125	071125				AP CASH DISBURSEMENTS JOURNAL			
APP 20800000-20100					ACCOUNTS PAYABLE		503.84	
07/11/2025 071125	071125				AP CASH DISBURSEMENTS JOURNAL			
APP 71000000-20100					ACCOUNTS PAYABLE		14,479.84	
07/11/2025 071125	071125				AP CASH DISBURSEMENTS JOURNAL			
APP 20400000-20100					ACCOUNTS PAYABLE		31.20	
07/11/2025 071125	071125				AP CASH DISBURSEMENTS JOURNAL			
APP 50000000-20100					ACCOUNTS PAYABLE		643,827.73	
07/11/2025 071125	071125				AP CASH DISBURSEMENTS JOURNAL			
APP 82100000-20100					ACCOUNTS PAYABLE		456,226.63	

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

YEAR PER JNL SRC ACCOUNT / EFF DATE	JNL DESC	REF 1	REF 2	REF 3	ACCOUNT DESC / LINE DESC	T	OB	DEBIT	CREDIT
07/11/2025 071125		071125			AP CASH DISBURSEMENTS JOURNAL				
APP 84400000-20100					ACCOUNTS PAYABLE			12,612.50	
07/11/2025 071125		071125			AP CASH DISBURSEMENTS JOURNAL				
APP 20500000-20100					ACCOUNTS PAYABLE			10,503.95	
07/11/2025 071125		071125			AP CASH DISBURSEMENTS JOURNAL				
APP 70000000-20100					ACCOUNTS PAYABLE			612.50	
07/11/2025 071125		071125			AP CASH DISBURSEMENTS JOURNAL				
APP 10600000-20100					ACCOUNTS PAYABLE			610.33	
07/11/2025 071125		071125			AP CASH DISBURSEMENTS JOURNAL				
APP 64000000-20100					ACCOUNTS PAYABLE			288.98	
07/11/2025 071125		071125			AP CASH DISBURSEMENTS JOURNAL				
APP 63000000-20100					ACCOUNTS PAYABLE			4,072.15	
07/11/2025 071125		071125			AP CASH DISBURSEMENTS JOURNAL				
APP 63800000-20100					ACCOUNTS PAYABLE			2,994.00	
07/11/2025 071125		071125			AP CASH DISBURSEMENTS JOURNAL				
APP 92200000-20100					ACCOUNTS PAYABLE			94.00	
07/11/2025 071125		071125			AP CASH DISBURSEMENTS JOURNAL				
APP 31100000-20100					ACCOUNTS PAYABLE			140.41	
07/11/2025 071125		071125			AP CASH DISBURSEMENTS JOURNAL				
					GENERAL LEDGER TOTAL			1,956,881.31	1,956,881.31
APP 99999999-99100					CASH DUE TO FUND 100			24,929.98	
07/11/2025 071125		071125							
APP 10000000-10101					POOLED CASH				24,929.98
07/11/2025 071125		071125							
APP 99999999-99206					CASH DUE TO FUND 206			251.45	
07/11/2025 071125		071125							
APP 20600000-10101					POOLED CASH				251.45
07/11/2025 071125		071125							
APP 99999999-99900					CASH DUE TO FUND 900			7,644.66	
07/11/2025 071125		071125							
APP 90000000-10101					POOLED CASH				7,644.66
07/11/2025 071125		071125							
APP 99999999-99315					CASH DUE TO FUND 315			22.53	
07/11/2025 071125		071125							
APP 31500000-10101					POOLED CASH				22.53
07/11/2025 071125		071125							
APP 99999999-99840					CASH DUE TO FUND 840			21,699.95	
07/11/2025 071125		071125							
APP 84000000-10101					POOLED CASH				21,699.95
07/11/2025 071125		071125							
APP 99999999-99820					CASH DUE TO FUND 820			40,414.60	
07/11/2025 071125		071125							
APP 82000000-10101					POOLED CASH				40,414.60
07/11/2025 071125		071125							
APP 99999999-99200					CASH DUE TO FUND 200			51,189.35	
07/11/2025 071125		071125							

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

YEAR PER JNL SRC ACCOUNT / EFF DATE	JNL DESC	REF 1	REF 2	REF 3	ACCOUNT DESC / LINE DESC	T	OB	DEBIT	CREDIT
APP 20000000-10101					POOLED CASH				51,189.35
07/11/2025 071125		071125							
APP 99999999-99207					CASH DUE TO FUND 207			3,898.74	
07/11/2025 071125		071125							
APP 20700000-10101					POOLED CASH				3,898.74
07/11/2025 071125		071125							
APP 99999999-99801					CASH DUE TO FUND 801			17,664.43	
07/11/2025 071125		071125							
APP 80100000-10101					POOLED CASH				17,664.43
07/11/2025 071125		071125							
APP 99999999-99252					CASH DUE TO FUND 252			489,625.26	
07/11/2025 071125		071125							
APP 25200000-10101					POOLED CASH				489,625.26
07/11/2025 071125		071125							
APP 99999999-99730					CASH DUE TO FUND 730			336.37	
07/11/2025 071125		071125							
APP 73000000-10101					POOLED CASH				336.37
07/11/2025 071125		071125							
APP 99999999-99830					CASH DUE TO FUND 830			94,332.50	
07/11/2025 071125		071125							
APP 83000000-10101					POOLED CASH				94,332.50
07/11/2025 071125		071125							
APP 99999999-99209					CASH DUE TO FUND 209			6,143.70	
07/11/2025 071125		071125							
APP 20900000-10101					POOLED CASH				6,143.70
07/11/2025 071125		071125							
APP 99999999-99105					CASH DUE TO FUND 105			23,796.62	
07/11/2025 071125		071125							
APP 10500000-10101					POOLED CASH				23,796.62
07/11/2025 071125		071125							
APP 99999999-99800					CASH DUE TO FUND 800			12,344.16	
07/11/2025 071125		071125							
APP 80000000-10101					POOLED CASH				12,344.16
07/11/2025 071125		071125							
APP 99999999-99777					CASH DUE TO FUND 777			1,324.64	
07/11/2025 071125		071125							
APP 77700000-10101					POOLED CASH				1,324.64
07/11/2025 071125		071125							
APP 99999999-99203					CASH DUE TO FUND 203			3,121.12	
07/11/2025 071125		071125							
APP 20300000-10101					POOLED CASH				3,121.12
07/11/2025 071125		071125							
APP 99999999-99927					CASH DUE TO FUND 927			11,143.19	
07/11/2025 071125		071125							
APP 92700000-10101					POOLED CASH				11,143.19
07/11/2025 071125		071125							
APP 99999999-99208					CASH DUE TO FUND 208			503.84	
07/11/2025 071125		071125							
APP 20800000-10101					POOLED CASH				503.84

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

YEAR PER JNL SRC ACCOUNT / EFF DATE	JNL DESC	REF 1	REF 2	REF 3	ACCOUNT DESC / LINE DESC	T OB	DEBIT	CREDIT
07/11/2025	071125	071125						
APP 99999999-99710					CASH DUE TO FUND 710		14,479.84	
07/11/2025	071125	071125						
APP 71000000-10101					POOLED CASH			14,479.84
07/11/2025	071125	071125						
APP 99999999-99204					CASH DUE TO FUND 204		31.20	
07/11/2025	071125	071125						
APP 20400000-10101					POOLED CASH			31.20
07/11/2025	071125	071125						
APP 99999999-99500					CASH DUE TO FUND 500		643,827.73	
07/11/2025	071125	071125						
APP 50000000-10101					POOLED CASH			643,827.73
07/11/2025	071125	071125						
APP 99999999-99821					CASH DUE TO FUND 821		456,226.63	
07/11/2025	071125	071125						
APP 82100000-10101					POOLED CASH			456,226.63
07/11/2025	071125	071125						
APP 99999999-99844					CASH DUE TO FUND 844		12,612.50	
07/11/2025	071125	071125						
APP 84400000-10101					POOLED CASH			12,612.50
07/11/2025	071125	071125						
APP 99999999-99205					CASH DUE TO FUND 205		10,503.95	
07/11/2025	071125	071125						
APP 20500000-10101					POOLED CASH			10,503.95
07/11/2025	071125	071125						
APP 99999999-99700					CASH DUE TO FUND 700		612.50	
07/11/2025	071125	071125						
APP 70000000-10101					POOLED CASH			612.50
07/11/2025	071125	071125						
APP 99999999-99106					CASH DUE TO FUND 106		610.33	
07/11/2025	071125	071125						
APP 10600000-10101					POOLED CASH			610.33
07/11/2025	071125	071125						
APP 99999999-99640					CASH DUE TO FUND 640		288.98	
07/11/2025	071125	071125						
APP 64000000-10101					POOLED CASH			288.98
07/11/2025	071125	071125						
APP 99999999-99630					CASH DUE TO FUND 630		4,072.15	
07/11/2025	071125	071125						
APP 63000000-10101					POOLED CASH			4,072.15
07/11/2025	071125	071125						
APP 99999999-99638					CASH DUE TO FUND 638		2,994.00	
07/11/2025	071125	071125						
APP 63800000-10101					POOLED CASH			2,994.00
07/11/2025	071125	071125						
APP 99999999-99922					CASH DUE TO FUND 922		94.00	
07/11/2025	071125	071125						
APP 92200000-10101					POOLED CASH			94.00
07/11/2025	071125	071125						

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

YEAR PER JNL SRC ACCOUNT / EFF DATE	JNL DESC	REF 1	REF 2	REF 3	ACCOUNT DESC / LINE DESC	T	OB	DEBIT	CREDIT
APP 99999999-99311					CASH DUE TO FUND 311			140.41	
07/11/2025 071125		071125							
APP 31100000-10101					POOLED CASH				140.41
07/11/2025 071125		071125							
					SYSTEM GENERATED ENTRIES TOTAL			1,956,881.31	1,956,881.31
					JOURNAL 2026/01/59	TOTAL		3,913,762.62	3,913,762.62

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND / ACCOUNT	YEAR	PER	JNL	EFF DATE	ACCOUNT DESCRIPTION		DEBIT	CREDIT
100 GENERAL FUND	2026	1	59	07/11/2025				
10000000-10101					POOLED CASH			24,929.98
10000000-20100					ACCOUNTS PAYABLE		24,929.98	
						FUND TOTAL	24,929.98	24,929.98
105 GF-(SUBFUND) FIRE AUTHORITY	2026	1	59	07/11/2025				
10500000-10101					POOLED CASH			23,796.62
10500000-20100					ACCOUNTS PAYABLE		23,796.62	
						FUND TOTAL	23,796.62	23,796.62
106 USDA FOREST SERV CWDG	2026	1	59	07/11/2025				
10600000-10101					POOLED CASH			610.33
10600000-20100					ACCOUNTS PAYABLE		610.33	
						FUND TOTAL	610.33	610.33
200 CITY ADMINISTRATIVE SERVICES	2026	1	59	07/11/2025				
20000000-10101					POOLED CASH			51,189.35
20000000-20100					ACCOUNTS PAYABLE		51,189.35	
						FUND TOTAL	51,189.35	51,189.35
203 GARAGE FUND	2026	1	59	07/11/2025				
20300000-10101					POOLED CASH			3,121.12
20300000-20100					ACCOUNTS PAYABLE		3,121.12	
						FUND TOTAL	3,121.12	3,121.12
204 PROCUREMENT, CAPITAL & SP PROJ	2026	1	59	07/11/2025				
20400000-10101					POOLED CASH			31.20
20400000-20100					ACCOUNTS PAYABLE		31.20	
						FUND TOTAL	31.20	31.20
205 BILLING AND COLLECTION FUND	2026	1	59	07/11/2025				
20500000-10101					POOLED CASH			10,503.95
20500000-20100					ACCOUNTS PAYABLE		10,503.95	
						FUND TOTAL	10,503.95	10,503.95
206 PUBLIC SAFETY DISPATCH FUND	2026	1	59	07/11/2025				
20600000-10101					POOLED CASH			251.45
20600000-20100					ACCOUNTS PAYABLE		251.45	
						FUND TOTAL	251.45	251.45
207 PAYROLL POSTING FUND	2026	1	59	07/11/2025				

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND / ACCOUNT	YEAR	PER	JNL	EFF DATE	ACCOUNT DESCRIPTION		DEBIT	CREDIT
20700000-10101					POOLED CASH			3,898.74
20700000-20100					ACCOUNTS PAYABLE		3,898.74	
						FUND TOTAL	3,898.74	3,898.74
208 BUILDING & GROUNDS MAINTENANCE	2026	1	59	07/11/2025				
20800000-10101					POOLED CASH			503.84
20800000-20100					ACCOUNTS PAYABLE		503.84	
						FUND TOTAL	503.84	503.84
209 IT FUND	2026	1	59	07/11/2025				
20900000-10101					POOLED CASH			6,143.70
20900000-20100					ACCOUNTS PAYABLE		6,143.70	
						FUND TOTAL	6,143.70	6,143.70
252 STREETS/RIGHTS-OF-WAY IMPRVMTS	2026	1	59	07/11/2025				
25200000-10101					POOLED CASH			489,625.26
25200000-20100					ACCOUNTS PAYABLE		489,625.26	
						FUND TOTAL	489,625.26	489,625.26
311 ARRC GENERAL OPERATING FUND	2026	1	59	07/11/2025				
31100000-10101					POOLED CASH			140.41
31100000-20100					ACCOUNTS PAYABLE		140.41	
						FUND TOTAL	140.41	140.41
315 ADVANCED PLANNING FUND	2026	1	59	07/11/2025				
31500000-10101					POOLED CASH			22.53
31500000-20100					ACCOUNTS PAYABLE		22.53	
						FUND TOTAL	22.53	22.53
500 GAS TAX FUND	2026	1	59	07/11/2025				
50000000-10101					POOLED CASH			643,827.73
50000000-20100					ACCOUNTS PAYABLE		643,827.73	
						FUND TOTAL	643,827.73	643,827.73
630 ASSET SEIZURE FUND	2026	1	59	07/11/2025				
63000000-10101					POOLED CASH			4,072.15
63000000-20100					ACCOUNTS PAYABLE		4,072.15	
						FUND TOTAL	4,072.15	4,072.15
638 ASSET FORFEITURE 11470.2 H&S F	2026	1	59	07/11/2025				
63800000-10101					POOLED CASH			2,994.00

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND / ACCOUNT	YEAR	PER	JNL	EFF DATE	ACCOUNT DESCRIPTION		DEBIT	CREDIT
63800000-20100					ACCOUNTS PAYABLE		2,994.00	
						FUND TOTAL	2,994.00	2,994.00
640 PARKING DISTRICT	2026	1	59	07/11/2025				
64000000-10101					POOLED CASH			288.98
64000000-20100					ACCOUNTS PAYABLE		288.98	
						FUND TOTAL	288.98	288.98
700 SANITARY DISPOSAL SITE FUND	2026	1	59	07/11/2025				
70000000-10101					POOLED CASH			612.50
70000000-20100					ACCOUNTS PAYABLE		612.50	
						FUND TOTAL	612.50	612.50
710 AMBULANCE SERVICES FUND	2026	1	59	07/11/2025				
71000000-10101					POOLED CASH			14,479.84
71000000-20100					ACCOUNTS PAYABLE		14,479.84	
						FUND TOTAL	14,479.84	14,479.84
730 CONFERENCE CENTER FUND	2026	1	59	07/11/2025				
73000000-10101					POOLED CASH			336.37
73000000-20100					ACCOUNTS PAYABLE		336.37	
						FUND TOTAL	336.37	336.37
777 AIRPORT FUND	2026	1	59	07/11/2025				
77700000-10101					POOLED CASH			1,324.64
77700000-20100					ACCOUNTS PAYABLE		1,324.64	
						FUND TOTAL	1,324.64	1,324.64
800 ELECTRIC FUND	2026	1	59	07/11/2025				
80000000-10101					POOLED CASH			12,344.16
80000000-20100					ACCOUNTS PAYABLE		12,344.16	
						FUND TOTAL	12,344.16	12,344.16
801 ELECTRIC CAPITAL RESERVE FUND	2026	1	59	07/11/2025				
80100000-10101					POOLED CASH			17,664.43
80100000-20100					ACCOUNTS PAYABLE		17,664.43	
						FUND TOTAL	17,664.43	17,664.43
820 WATER FUND	2026	1	59	07/11/2025				
82000000-10101					POOLED CASH			40,414.60
82000000-20100					ACCOUNTS PAYABLE		40,414.60	

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND / ACCOUNT	YEAR	PER	JNL	EFF DATE	ACCOUNT DESCRIPTION		DEBIT	CREDIT
					FUND TOTAL		40,414.60	40,414.60
821 WATER CAPITAL RESERVE FUND	2026	1	59	07/11/2025				
82100000-10101					POOLED CASH			456,226.63
82100000-20100					ACCOUNTS PAYABLE		456,226.63	
					FUND TOTAL		456,226.63	456,226.63
830 RECYCLED WATER FUND	2026	1	59	07/11/2025				
83000000-10101					POOLED CASH			94,332.50
83000000-20100					ACCOUNTS PAYABLE		94,332.50	
					FUND TOTAL		94,332.50	94,332.50
840 CITY SEWER OPERATIONS FUN	2026	1	59	07/11/2025				
84000000-10101					POOLED CASH			21,699.95
84000000-20100					ACCOUNTS PAYABLE		21,699.95	
					FUND TOTAL		21,699.95	21,699.95
844 CITY SEWER CAPITAL PROJECTS FU	2026	1	59	07/11/2025				
84400000-10101					POOLED CASH			12,612.50
84400000-20100					ACCOUNTS PAYABLE		12,612.50	
					FUND TOTAL		12,612.50	12,612.50
900 SPECIAL DEPOSIT TRUST FUND	2026	1	59	07/11/2025				
90000000-10101					POOLED CASH			7,644.66
90000000-20100					ACCOUNTS PAYABLE		7,644.66	
					FUND TOTAL		7,644.66	7,644.66
922 MILLVIEW COUNTY WATER DISTRICT	2026	1	59	07/11/2025				
92200000-10101					POOLED CASH			94.00
92200000-20100					ACCOUNTS PAYABLE		94.00	
					FUND TOTAL		94.00	94.00
927 REDWOOD VALLEY WATER DISTR	2026	1	59	07/11/2025				
92700000-10101					POOLED CASH			11,143.19
92700000-20100					ACCOUNTS PAYABLE		11,143.19	
					FUND TOTAL		11,143.19	11,143.19
999 POOLED CASH FUND	2026	1	59	07/11/2025				
99999999-10100					US BANK CHECKING			1,956,881.31
99999999-99100					CASH DUE TO FUND 100		24,929.98	
99999999-99105					CASH DUE TO FUND 105		23,796.62	

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND / ACCOUNT	YEAR PER	JNL	EFF DATE	ACCOUNT DESCRIPTION	DEBIT	CREDIT
99999999-99106				CASH DUE TO FUND 106	610.33	
99999999-99200				CASH DUE TO FUND 200	51,189.35	
99999999-99203				CASH DUE TO FUND 203	3,121.12	
99999999-99204				CASH DUE TO FUND 204	31.20	
99999999-99205				CASH DUE TO FUND 205	10,503.95	
99999999-99206				CASH DUE TO FUND 206	251.45	
99999999-99207				CASH DUE TO FUND 207	3,898.74	
99999999-99208				CASH DUE TO FUND 208	503.84	
99999999-99209				CASH DUE TO FUND 209	6,143.70	
99999999-99252				CASH DUE TO FUND 252	489,625.26	
99999999-99311				CASH DUE TO FUND 311	140.41	
99999999-99315				CASH DUE TO FUND 315	22.53	
99999999-99500				CASH DUE TO FUND 500	643,827.73	
99999999-99630				CASH DUE TO FUND 630	4,072.15	
99999999-99638				CASH DUE TO FUND 638	2,994.00	
99999999-99640				CASH DUE TO FUND 640	288.98	
99999999-99700				CASH DUE TO FUND 700	612.50	
99999999-99710				CASH DUE TO FUND 710	14,479.84	
99999999-99730				CASH DUE TO FUND 730	336.37	
99999999-99777				CASH DUE TO FUND 777	1,324.64	
99999999-99800				CASH DUE TO FUND 800	12,344.16	
99999999-99801				CASH DUE TO FUND 801	17,664.43	
99999999-99820				CASH DUE TO FUND 820	40,414.60	
99999999-99821				CASH DUE TO FUND 821	456,226.63	
99999999-99830				CASH DUE TO FUND 830	94,332.50	
99999999-99840				CASH DUE TO FUND 840	21,699.95	
99999999-99844				CASH DUE TO FUND 844	12,612.50	
99999999-99900				CASH DUE TO FUND 900	7,644.66	
99999999-99922				CASH DUE TO FUND 922	94.00	
99999999-99927				CASH DUE TO FUND 927	11,143.19	
				FUND TOTAL	1,956,881.31	1,956,881.31

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND			DUE TO	DUE FR
100	GENERAL FUND			24,929.98
105	GF-(SUBFUND) FIRE AUTHORITY			23,796.62
106	USDA FOREST SERV CWDG			610.33
200	CITY ADMINISTRATIVE SERVICES			51,189.35
203	GARAGE FUND			3,121.12
204	PROCUREMENT, CAPITAL & SP PROJ			31.20
205	BILLING AND COLLECTION FUND			10,503.95
206	PUBLIC SAFETY DISPATCH FUND			251.45
207	PAYROLL POSTING FUND			3,898.74
208	BUILDING & GROUNDS MAINTENANCE			503.84
209	IT FUND			6,143.70
252	STREETS/RIGHTS-OF-WAY IMPRVMTS			489,625.26
311	ARRC GENERAL OPERATING FUND			140.41
315	ADVANCED PLANNING FUND			22.53
500	GAS TAX FUND			643,827.73
630	ASSET SEIZURE FUND			4,072.15
638	ASSET FORFEITURE 11470.2 H&S F			2,994.00
640	PARKING DISTRICT			288.98
700	SANITARY DISPOSAL SITE FUND			612.50
710	AMBULANCE SERVICES FUND			14,479.84
730	CONFERENCE CENTER FUND			336.37
777	AIRPORT FUND			1,324.64
800	ELECTRIC FUND			12,344.16
801	ELECTRIC CAPITAL RESERVE FUND			17,664.43
820	WATER FUND			40,414.60
821	WATER CAPITAL RESERVE FUND			456,226.63
830	RECYCLED WATER FUND			94,332.50
840	CITY SEWER OPERATIONS FUN			21,699.95
844	CITY SEWER CAPITAL PROJECTS FU			12,612.50
900	SPECIAL DEPOSIT TRUST FUND			7,644.66
922	MILLVIEW COUNTY WATER DISTRICT			94.00
927	REDWOOD VALLEY WATER DISTR			11,143.19
999	POOLED CASH FUND		1,956,881.31	
		TOTAL	1,956,881.31	1,956,881.31

** END OF REPORT - Generated by MaryJo Reynolds **

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063571	07/18/2025	PRTD	15547	AT&T MOBILITY	150551	287303138700X071025	07/02/2025		071825	2,534.87
								CHECK	3063571 TOTAL:	2,534.87
3063572	07/18/2025	PRTD	11541	AT&T	150354	000023720529	07/02/2025		071825	31.58
								CHECK	3063572 TOTAL:	31.58
3063573	07/18/2025	PRTD	11541	AT&T	150355	000023720530	07/02/2025		071825	19.54
								CHECK	3063573 TOTAL:	19.54
3063574	07/18/2025	PRTD	10370	ACME RIGGING COMPANY	150362	344965	04/23/2025		071825	223.75
								CHECK	3063574 TOTAL:	223.75
3063575	07/18/2025	PRTD	10389	ADAMSON POLICE PRODU	150356	INV436915	06/28/2025		071825	851.37
								CHECK	3063575 TOTAL:	851.37
3063576	07/18/2025	PRTD	2437	ALEXANDER DE GRASSI	150357	APR-JUN 25	06/30/2025		071825	300.00
								CHECK	3063576 TOTAL:	300.00
3063577	07/18/2025	PRTD	21321	ALLEN JAMES	150360	4/12/25	07/07/2025		071825	182.00
								CHECK	3063577 TOTAL:	182.00
3063578	07/18/2025	PRTD	16219	ALLIANT INSURANCE SE	150358	3134720	06/24/2025		071825	8,000.00
								CHECK	3063578 TOTAL:	8,000.00
3063579	07/18/2025	PRTD	683	ALONZO FRIAS	150361	BA FY 25/26	07/01/2025		071825	261.29
								CHECK	3063579 TOTAL:	261.29
3063580	07/18/2025	PRTD	10630	ALPHA ANALYTICAL LAB	150513	5024334-RVCWD	02/13/2025		071825	657.00
					150514	5025266-RVCWD	02/19/2025		071825	135.00
								CHECK	3063580 TOTAL:	792.00

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063581	07/18/2025	PRTD	1272	AMAZON CAPITAL SERVI	150176	1NTQ-X7TW-7GG3	06/22/2025		071825	54.40
					150177	19KP-F1NQ-VTDF	06/25/2025		071825	133.99
					150512	14TV-HQGC-MVPK	06/09/2025		071825	1,254.84
					150516	1H7M-49MH-6WC3	06/23/2025		071825	29.18
					150517	1L61-VWHN-6LYH	06/23/2025		071825	-29.18
					150518	1WK4-J31C-6LNQ	06/23/2025		071825	1,359.57
					150533	17CX-7G7X-71TK	06/23/2025		071825	12.13
					150534	19KP-F1NQ-6RJK	06/23/2025		071825	205.17
					150535	1GH7-JG4T-JKVC	06/24/2025		071825	54.38
					150536	1ML6-WL3G-KNF3	06/24/2025		071825	27.16
					150537	17G3-HJW3-X1QM	06/25/2025		071825	117.50
					150538	164V-DLVR-3VLC	06/26/2025		071825	109.63
					150539	1L73-7GW4-RHFW	06/28/2025		071825	401.73
					150540	1L73-7GW4-TDD1	06/28/2025		071825	32.65
								CHECK	3063581 TOTAL:	3,763.15
3063582	07/18/2025	PRTD	643	ANDREW STRICKLIN	150543	10260	07/15/2025		071825	22.07
								CHECK	3063582 TOTAL:	22.07
3063583	07/18/2025	PRTD	956	ANIXTER INC	150186	6372873-04	06/25/2025	48797	071825	1,861.33
					150544	6372873-03	06/17/2025	48797	071825	2,776.53
								CHECK	3063583 TOTAL:	4,637.86
3063584	07/18/2025	PRTD	1869	AP TRITON CONSULTING	150545	2025-077	03/01/2025		071825	5,000.00
					150547	2025-100	04/01/2025		071825	5,000.00
								CHECK	3063584 TOTAL:	10,000.00

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063585	07/18/2025	PRTD	2418	BKF ENGINEERS INC	149651	25060879	06/23/2025		071825	891.75
								CHECK	3063585 TOTAL:	891.75
3063586	07/18/2025	PRTD	1285	COFFEE CRITIC INC, T	150552	R38858	06/19/2025		071825	110.00
								CHECK	3063586 TOTAL:	110.00
3063587	07/18/2025	PRTD	20	CALPERS EDUCATIONAL	150520	100000017807596	03/01/2025		071825	75.00
								CHECK	3063587 TOTAL:	75.00
3063588	07/18/2025	PRTD	3320	CASEY TERRILL	150521	0038959	07/09/2025		071825	59.50
								CHECK	3063588 TOTAL:	59.50
3063589	07/18/2025	PRTD	3326	CHEYANNE CEJA	150553	0040816	07/09/2025		071825	70.00
								CHECK	3063589 TOTAL:	70.00
3063590	07/18/2025	PRTD	40536	CHRISTOPHER WALKER	150522	BA FY 24/25	03/15/2025		071825	104.51
								CHECK	3063590 TOTAL:	104.51
3063591	07/18/2025	PRTD	28800	CITY OF UKIAH	150523	8834	07/03/2025		071825	36,555.94
								CHECK	3063591 TOTAL:	36,555.94
3063592	07/18/2025	PRTD	28800	CITY OF UKIAH	150524	8833	07/03/2025		071825	47,362.69
								CHECK	3063592 TOTAL:	47,362.69
3063593	07/18/2025	PRTD	2873	CLEARLAKE LAVA INC	150525	39403	05/31/2025		071825	524.45
								CHECK	3063593 TOTAL:	524.45
3063594	07/18/2025	PRTD	24150	MENDOCINO COUNTY	150365	2024/25-61	03/26/2025	48853	071825	36,974.20
								CHECK	3063594 TOTAL:	36,974.20

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CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063595	07/18/2025	PRTD	676	COLANTUONO HIGHSMITH	150526	66119	07/03/2025		071825	1,341.50
								CHECK	3063595 TOTAL:	1,341.50
3063596	07/18/2025	PRTD	2812	DAVID MENDEZ	150527	3/13-7/17/25	07/15/2025		071825	38.50
								CHECK	3063596 TOTAL:	38.50
3063597	07/18/2025	PRTD	15874	DELL MARKETING LP	149692	10818780480	06/07/2025		071825	1,413.92
								CHECK	3063597 TOTAL:	1,413.92
3063598	07/18/2025	PRTD	2368	DOUGLAS ERIC JOHNSON	150528	APR-JUN 25	06/30/2025		071825	300.00
								CHECK	3063598 TOTAL:	300.00
3063599	07/18/2025	PRTD	16453	EFAX CORPORATE	150529	5530550	06/30/2025		071825	159.90
								CHECK	3063599 TOTAL:	159.90
3063600	07/18/2025	PRTD	38535	EUREKA OXYGEN	150270	482675	06/26/2025		071825	538.25
					150530	482471	04/17/2025		071825	560.00
					150531	482470	04/17/2025		071825	507.39
					150532	482469	04/17/2025		071825	342.00
								CHECK	3063600 TOTAL:	1,947.64
3063601	07/18/2025	PRTD	211	EVERGREEN JOB & SAFE	150007	2025	06/23/2025	48648	071825	2,395.00
								CHECK	3063601 TOTAL:	2,395.00
3063602	07/18/2025	PRTD	17843	FRIEDMANS HOME IMPRO	150555	INV20300432	05/25/2025		071825	70.20
					150556	INV20172119	05/02/2025		071825	99.58
					150557	INV20239354	05/14/2025		071825	119.12
								CHECK	3063602 TOTAL:	288.90

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CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063603	07/18/2025	PRTD	2400	GEORGE PETERSEN INSU	150239	96485	07/07/2025		071825	2,108.83
								CHECK	3063603 TOTAL:	2,108.83
3063604	07/18/2025	PRTD	18142	GHD INC	150237	380-0072745	06/24/2025		071825	11,368.82
								CHECK	3063604 TOTAL:	11,368.82
3063605	07/18/2025	PRTD	18533	GRAINGER INC	150235	9556382738	06/27/2025		071825	316.79
								CHECK	3063605 TOTAL:	316.79
3063606	07/18/2025	PRTD	1477	LYMAN GROUP INC	150558	1955525	05/16/2025		071825	9.64
								CHECK	3063606 TOTAL:	9.64
3063607	07/18/2025	PRTD	18820	HACH COMPANY	148633	14495389	05/13/2025		071825	613.06
								CHECK	3063607 TOTAL:	613.06
3063608	07/18/2025	PRTD	1924	HDL COREN & CONE	150559	SIN051907	07/01/2025		071825	6,850.00
								CHECK	3063608 TOTAL:	6,850.00
3063609	07/18/2025	PRTD	2061	HINDERLITER DE LLAMA	150560	SIN050928	06/15/2025		071825	1,622.01
					150561	SIN050845	06/20/2025		071825	300.00
								CHECK	3063609 TOTAL:	1,922.01
3063610	07/18/2025	PRTD	19614	HOME DEPOT CREDIT SE	150508	6020929	05/15/2025		071825	260.97
					150509	12344	04/21/2025		071825	122.64
					150510	8072356	04/03/2025		071825	54.42
					150569	82857	04/11/2025		071825	105.61
					150570	8030151	05/23/2025		071825	880.10
								CHECK	3063610 TOTAL:	1,423.74

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CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063611	07/18/2025	PRTD	412	INTERWEST CONSULTING	149984	2094132	06/23/2025		071825	385.00
								CHECK	3063611 TOTAL:	385.00
3063612	07/18/2025	PRTD	21170	DANIEL F MEAD	149983	52203	06/20/2025		071825	109.26
								CHECK	3063612 TOTAL:	109.26
3063613	07/18/2025	PRTD	2976	KASEYA US LLC	150562	2464554489047	07/07/2025		071825	408.45
								CHECK	3063613 TOTAL:	408.45
3063614	07/18/2025	PRTD	1184	LARRY WALKER ASSOCIA	150196	00564.08-44	06/13/2025		071825	4,557.50
								CHECK	3063614 TOTAL:	4,557.50
3063615	07/18/2025	PRTD	22560	LC ACTION POLICE SUP	149972	56221	06/25/2025		071825	4,389.11
								CHECK	3063615 TOTAL:	4,389.11
3063616	07/18/2025	PRTD	22829	LIEBERT CASSIDY WHIT	150564	296323	05/31/2025		071825	6,355.00
								CHECK	3063616 TOTAL:	6,355.00
3063617	07/18/2025	PRTD	24050	MENDO MILL & LUMBER	149565	35418/1	06/01/2025		071825	34.71
					149566	35577/1	06/03/2025		071825	293.52
					149567	35720/1	06/05/2025		071825	145.58
					149568	35729/1	06/05/2025		071825	30.73
					149569	35927/1	06/08/2025		071825	267.33
					149570	35932/1	06/08/2025		071825	136.28
					149571	36037/1	06/09/2025		071825	11.74
					149572	36135/1	06/10/2025		071825	285.18
					149573	36139/1	06/10/2025		071825	38.06
					149574	36210/1	06/11/2025		071825	1,049.11
					149575	36358/1	06/13/2025		071825	740.86

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CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
					149576	36416/1	06/15/2025		071825	154.88
					149577	36433/1	06/16/2025		071825	99.22
					149578	36097/1	06/10/2025		071825	46.86
					149579	36746/1	06/19/2025		071825	81.96
					150044	37056/1	06/24/2025		071825	14.01
					150045	37071/1	06/24/2025		071825	82.08
					150047	36883/1	06/21/2025		071825	26.28
					150048	36898/1	06/22/2025		071825	16.96
					150049	36905/1	06/22/2025		071825	13.10
					150050	37121/1	06/25/2025		071825	-16.82
					150051	37149/1	06/25/2025		071825	7.70
					150052	37179/1	06/25/2025		071825	3.87
					150053	37187/1	06/25/2025		071825	8.73
					150054	37289/1	06/27/2025		071825	59.83
					150055	37307/1	06/27/2025		071825	36.71
					150191	37201/1	06/26/2025		071825	8.62
					150213	35505/1	06/02/2025		071825	-150.83
								CHECK	3063617 TOTAL:	3,526.26
3063618	07/18/2025	PRTD	26500	NCPA	150063	006102-0725030	06/24/2025		071825	1,076,970.00
								CHECK	3063618 TOTAL:	1,076,970.00
3063619	07/18/2025	PRTD	26719	OPPERMAN & SON INC	150221	01P82460	06/11/2025		071825	67.62
					150222	01P82537	06/13/2025		071825	2,657.13
					150223	01P82785	06/25/2025		071825	93.47
					150224	01P82843	06/26/2025		071825	182.30

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CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
							CHECK	3063619 TOTAL:		3,000.52
3063620	07/18/2025	PRTD	399	OREILLY AUTOMOTIVE I	150366	2707-414026	05/29/2025		071825	171.30
					150367	2707-414437	05/30/2025		071825	87.42
					150368	2707-414704	05/31/2025		071825	45.30
					150369	2707-415126	06/02/2025		071825	32.66
					150370	2707-415132	06/02/2025		071825	219.70
					150371	2707-415544	06/03/2025		071825	48.69
					150372	2707-415880	06/04/2025		071825	254.23
					150373	2707-415944	06/04/2025		071825	247.03
					150374	2707-415954	06/04/2025		071825	51.72
					150375	2707-415971	06/04/2025		071825	207.73
					150376	2707-416032	06/04/2025		071825	51.15
					150377	2707-416252	06/05/2025		071825	83.82
					150378	2707-416086	06/04/2025		071825	12.42
					150379	2707-416256	06/05/2025		071825	174.51
					150380	2707-416257	06/05/2025		071825	494.07
					150382	2707-416264	06/05/2025		071825	314.24
					150383	2707-416270	06/05/2025		071825	152.40
					150384	2707-417434	06/09/2025		071825	38.07
					150385	2707-417561	06/09/2025		071825	74.90
					150386	2707-417565	06/09/2025		071825	18.52
					150387	2707-417879	06/10/2025		071825	481.26
					150388	2707-418004	06/10/2025		071825	-71.30
					150389	2707-418084	06/10/2025		071825	20.14
					150390	2707-418137	06/10/2025		071825	-157.86
					150391	2707-418190	06/11/2025		071825	75.90

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CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
					150392	2707-418234	06/11/2025		071825	166.60
					150393	2707-418301	06/11/2025		071825	397.20
					150394	2707-418682	06/12/2025		071825	203.44
					150395	2707-418572	06/12/2025		071825	92.54
					150396	2707-419942	06/16/2025		071825	164.75
					150397	2707-420174	06/17/2025		071825	426.77
					150398	2707-420180	06/17/2025		071825	37.24
					150399	2707-420287	06/17/2025		071825	148.40
					150400	2707-420353	06/17/2025		071825	4.13
					150401	2707-420405	06/17/2025		071825	164.24
					150402	2707-420663	06/18/2025		071825	-22.00
					150403	2707-422039	06/23/2025		071825	494.07
					150404	2707-422040	06/23/2025		071825	13.33
					150405	2707-422044	06/23/2025		071825	55.56
					150406	2707-422157	06/23/2025		071825	119.78
					150407	2707-422216	06/23/2025		071825	-44.00
					150408	2707-422254	06/23/2025		071825	112.36
					150410	2707-422444	06/24/2025		071825	26.65
					150413	2707-422662	06/24/2025		071825	30.49
					150414	2707-422700	06/24/2025		071825	37.00
					150415	2707-423390	06/26/2025		071825	12.49
					150417	2707-423403	06/26/2025		071825	37.38
					150418	2707-423434	06/26/2025		071825	32.64
					150419	2707-418215	06/11/2025		071825	5.76
					150464	2707-414066	05/29/2025		071825	533.74
					150465	2707-414111	05/29/2025		071825	-110.00

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CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
					150466	2707-418014	06/10/2025		071825	115.41
					150467	2707-418016	06/10/2025		071825	-115.41
					150468	2707-418017	06/10/2025		071825	146.97
					150469	2707-418034	06/10/2025		071825	9.12
					150471	2707-422562	06/24/2025		071825	-542.80
					150571	2707-416049	06/04/2025		071825	12.19
								CHECK	3063620 TOTAL:	5,894.06
3063621	07/18/2025	PRTD	27116	OWEN EQUIPMENT SALES	150472	00067667	06/20/2025		071825	1,563.47
								CHECK	3063621 TOTAL:	1,563.47
3063622	07/18/2025	PRTD	3218	PAYTON MANTOOTH	150230	TA 6/30-7/11/25	06/30/2025		071825	184.00
								CHECK	3063622 TOTAL:	184.00
3063623	07/18/2025	PRTD	3057	PENCCO INC	150421	205685	06/06/2025		071825	17,293.20
								CHECK	3063623 TOTAL:	17,293.20
3063624	07/18/2025	PRTD	27870	PETERSON CAT	150252	PC060196903	06/12/2025		071825	23.62
								CHECK	3063624 TOTAL:	23.62
3063625	07/18/2025	PRTD	183	PETERSON TRUCKS INC	150422	298725R	05/01/2025		071825	49.48
					150423	300563R	06/11/2025		071825	906.54
					150424	300566R	06/11/2025		071825	112.08
					150425	300849R	06/18/2025		071825	138.32
					150426	300985RX1	06/23/2025		071825	68.65
					150427	301140R	06/23/2025		071825	987.33
					150428	301238R	06/25/2025		071825	112.96
					150429	301317R	06/26/2025		071825	141.62

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CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
					150430	300985R	06/19/2025		071825	280.83
					150431	CM299845R	06/24/2025		071825	-367.45
					150432	300810R	06/16/2025		071825	45.54
								CHECK	3063625 TOTAL:	2,475.90
3063626	07/18/2025	PRTD	27260	PG&E CO	150475	0853-6 JUN 25	07/03/2025		071825	5,166.26
								CHECK	3063626 TOTAL:	5,166.26
3063627	07/18/2025	PRTD	28000	PITNEY BOWES INC	150457	1027691730	06/29/2025		071825	235.91
								CHECK	3063627 TOTAL:	235.91
3063628	07/18/2025	PRTD	1518	REXEL USA INC	150433	6H88027	05/28/2025		071825	128.76
					150434	6I00141	05/29/2025		071825	368.13
					150435	6i19429	06/05/2025		071825	71.54
					150436	6I92195	06/12/2025		071825	275.21
					150437	6I92236	06/12/2025		071825	21.56
					150438	6J35069	06/18/2025		071825	168.98
					150439	6J98309	06/25/2025		071825	186.96
					150440	6K17540	06/27/2025		071825	734.37
								CHECK	3063628 TOTAL:	1,955.51
3063629	07/18/2025	PRTD	28075	POLYDYNE INC	150458	1892641	01/06/2025		071825	574.86
								CHECK	3063629 TOTAL:	574.86
3063630	07/18/2025	PRTD	29100	RAINBOW AGRICULTURAL	150442	81128/H	06/19/2025		071825	155.66
					150443	998002/H	06/24/2025		071825	3,430.68
								CHECK	3063630 TOTAL:	3,586.34

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CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063631	07/18/2025	PRTD	29995	NICK BARBIERI TRUCKI	150444	1218839-IN	06/30/2025		071825	1,478.43
					150445	1219190-IN	06/30/2025		071825	186.22
								CHECK	3063631 TOTAL:	1,664.65
3063632	07/18/2025	PRTD	632	REDWOOD TREE SERVICE	150446	JUN 25	06/30/2025		071825	640.95
								CHECK	3063632 TOTAL:	640.95
3063633	07/18/2025	PRTD	30842	RINEHART OIL INC	150447	CL47330	06/15/2025		071825	1,599.40
					150448	CL47331	06/15/2025		071825	128.30
					150449	CL47246	06/15/2025		071825	2,613.63
					150450	CL47272	06/15/2025		071825	4,092.40
					150451	CL47329	06/15/2025		071825	3,805.17
					150452	CL47424	06/30/2025		071825	638.48
					150453	CL47389	06/30/2025		071825	2,136.15
					150454	CL47432	06/30/2025		071825	2,153.56
					150455	CL47447	06/30/2025		071825	423.19
					150461	CL47448	06/30/2025		071825	69.59
					150572	CL47415	06/30/2025		071825	4,668.23
					150573	CL47453	06/30/2025		071825	1,140.66
					150574	CL47454	06/30/2025		071825	1,665.78
					150575	CL47472	06/30/2025		071825	3,882.27
					150576	CL47474	06/30/2025		071825	552.47
								CHECK	3063633 TOTAL:	29,569.28
3063634	07/18/2025	PRTD	41970	ROUND TABLE PIZZA	150456	2019499	07/15/2025		071825	138.60
								CHECK	3063634 TOTAL:	138.60

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CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063635	07/18/2025	PRTD	33559	SCOTT SHAVER	150490	88061-7780	07/07/2025		071825	50.85
								CHECK	3063635 TOTAL:	50.85
3063636	07/18/2025	PRTD	2837	BENJAMIN H HAMPTON	150462	9792	06/18/2025		071825	160.00
								CHECK	3063636 TOTAL:	160.00
3063637	07/18/2025	PRTD	40447	SHERI MANNION	150463	980	07/14/2025		071825	102.01
								CHECK	3063637 TOTAL:	102.01
3063638	07/18/2025	PRTD	2759	ELLISON SYSTEMS INC	150476	1749742391	06/17/2025		071825	327.93
								CHECK	3063638 TOTAL:	327.93
3063639	07/18/2025	PRTD	34605	A DIVISION OF IDSC H	150473	ARV/65031724	06/20/2025		071825	2,151.08
					150474	ARV/65027857	06/20/2025		071825	511.90
								CHECK	3063639 TOTAL:	2,662.98
3063640	07/18/2025	PRTD	3323	SOUTHERN NEW HAMPSHI	150477	JUN 25-OCT 25	06/25/2025		071825	4,032.00
								CHECK	3063640 TOTAL:	4,032.00
3063641	07/18/2025	PRTD	1613	SONIC NET LLC	150492	1010550759	05/17/2025		071825	18.20
					150493	1010765159	06/16/2025		071825	18.20
								CHECK	3063641 TOTAL:	36.40
3063642	07/18/2025	PRTD	2574	SOUTHERN TIRE MART L	150478	7740010465	06/11/2025		071825	1,158.61
					150479	7740010597	06/23/2025		071825	94.12
								CHECK	3063642 TOTAL:	1,252.73
3063643	07/18/2025	PRTD	1583	RAY C STARKEY	150481	P-2500565	07/08/2025		071825	60.00
								CHECK	3063643 TOTAL:	60.00

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CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063644	07/18/2025	PRTD	218	SUSAN JANSSEN	150482	JULY 14, 2025	07/14/2025		071825	250.00
					150483	JULY 7, 2025	07/07/2025		071825	250.00
								CHECK	3063644 TOTAL:	500.00
3063645	07/18/2025	PRTD	3301	SUSAN ROBERTS	150511	P-751	04/21/2025		071825	2,000.00
								CHECK	3063645 TOTAL:	2,000.00
3063646	07/18/2025	PRTD	36003	TGIF REPAIRS INC	150485	7368	06/04/2025		071825	262.50
					150486	7369	06/04/2025		071825	262.50
								CHECK	3063646 TOTAL:	525.00
3063647	07/18/2025	PRTD	33801	TIFFANY BREECE	150488	TA 6/22-26/25	06/12/2025		071825	1,956.05
								CHECK	3063647 TOTAL:	1,956.05
3063648	07/18/2025	PRTD	36862	TUFTS POLYGRAPH & IN	150494	2025-1067(A)	07/03/2025		071825	1,250.00
								CHECK	3063648 TOTAL:	1,250.00
3063649	07/18/2025	PRTD	37590	UKIAH DAILY JOURNAL	150495	0006898847	05/30/2025		071825	212.81
								CHECK	3063649 TOTAL:	212.81
3063650	07/18/2025	PRTD	31040	UKIAH ROUND TREE GLA	150496	32774	06/18/2025		071825	55.00
								CHECK	3063650 TOTAL:	55.00
3063651	07/18/2025	PRTD	39043	UKIAH TROPHIES & GIF	150497	0002914	06/03/2025		071825	1,341.34
					150498	0002915	06/03/2025		071825	975.52
								CHECK	3063651 TOTAL:	2,316.86
3063652	07/18/2025	PRTD	59	UKIAH WASTE SOLUTION	150499	176969696U034	07/01/2025		071825	32,902.01
								CHECK	3063652 TOTAL:	32,902.01

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063653	07/18/2025	PRTD	577	UNITED SITE SERVICES	150500	INV-5429174	06/30/2025		071825	109.98
					150501	INV-5430390	06/30/2025		071825	195.14
					150502	INV-5433103	06/30/2025		071825	195.14
								CHECK	3063653 TOTAL:	500.26
3063654	07/18/2025	PRTD	1249	US BANK CORPORATE PA	150503	05-28	06/25/2025		071825	1,809.67
					150504	06-16	06/25/2025		071825	13.50
								CHECK	3063654 TOTAL:	1,823.17
3063655	07/18/2025	PRTD	39609	US CELLULAR	150505	740534021	07/04/2025		071825	233.77
								CHECK	3063655 TOTAL:	233.77
3063656	07/18/2025	PRTD	3023	ASCENT AVIATION GROU	149958	1121457	06/21/2025		071825	21,083.11
					150549	1127599	07/13/2025		071825	23,019.46
								CHECK	3063656 TOTAL:	44,102.57
3063657	07/18/2025	PRTD	39870	WYATT IRRIGATION CO	150506	339509 01	06/23/2025		071825	173.45
					150507	339563 02	06/25/2025		071825	259.00
								CHECK	3063657 TOTAL:	432.45
						NUMBER OF CHECKS 87			*** CASH ACCOUNT TOTAL ***	1,455,008.33

	COUNT	AMOUNT
TOTAL PRINTED CHECKS	87	1,455,008.33

*** GRAND TOTAL *** 1,455,008.33

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

CLERK: mreynolds

YEAR PER JNL SRC ACCOUNT / EFF DATE	JNL DESC	REF 1	REF 2	REF 3	ACCOUNT DESC / LINE DESC	T	OB	DEBIT	CREDIT
2026 1 107									
APP 10500000-20100					ACCOUNTS PAYABLE			18,333.62	
07/18/2025	071825	071825			AP CASH DISBURSEMENTS JOURNAL				
APP 99999999-10100					US BANK CHECKING				1,455,008.33
07/18/2025	071825	071825			AP CASH DISBURSEMENTS JOURNAL				
APP 71000000-20100					ACCOUNTS PAYABLE			20,753.75	
07/18/2025	071825	071825			AP CASH DISBURSEMENTS JOURNAL				
APP 10600000-20100					ACCOUNTS PAYABLE			2,460.92	
07/18/2025	071825	071825			AP CASH DISBURSEMENTS JOURNAL				
APP 92700000-20100					ACCOUNTS PAYABLE			38,434.90	
07/18/2025	071825	071825			AP CASH DISBURSEMENTS JOURNAL				
APP 20000000-20100					ACCOUNTS PAYABLE			20,685.30	
07/18/2025	071825	071825			AP CASH DISBURSEMENTS JOURNAL				
APP 10000000-20100					ACCOUNTS PAYABLE			39,733.14	
07/18/2025	071825	071825			AP CASH DISBURSEMENTS JOURNAL				
APP 77700000-20100					ACCOUNTS PAYABLE			52,186.10	
07/18/2025	071825	071825			AP CASH DISBURSEMENTS JOURNAL				
APP 82000000-20100					ACCOUNTS PAYABLE			8,101.23	
07/18/2025	071825	071825			AP CASH DISBURSEMENTS JOURNAL				
APP 90000000-20100					ACCOUNTS PAYABLE			2,190.39	
07/18/2025	071825	071825			AP CASH DISBURSEMENTS JOURNAL				
APP 73000000-20100					ACCOUNTS PAYABLE			193.99	
07/18/2025	071825	071825			AP CASH DISBURSEMENTS JOURNAL				
APP 69600000-20100					ACCOUNTS PAYABLE			12.13	
07/18/2025	071825	071825			AP CASH DISBURSEMENTS JOURNAL				
APP 80000000-20100					ACCOUNTS PAYABLE			1,087,567.09	
07/18/2025	071825	071825			AP CASH DISBURSEMENTS JOURNAL				
APP 50900000-20100					ACCOUNTS PAYABLE			891.75	
07/18/2025	071825	071825			AP CASH DISBURSEMENTS JOURNAL				
APP 20800000-20100					ACCOUNTS PAYABLE			2,028.59	
07/18/2025	071825	071825			AP CASH DISBURSEMENTS JOURNAL				
APP 92200000-20100					ACCOUNTS PAYABLE			47,992.06	
07/18/2025	071825	071825			AP CASH DISBURSEMENTS JOURNAL				
APP 91500000-20100					ACCOUNTS PAYABLE			36,974.20	
07/18/2025	071825	071825			AP CASH DISBURSEMENTS JOURNAL				
APP 20400000-20100					ACCOUNTS PAYABLE			38.50	
07/18/2025	071825	071825			AP CASH DISBURSEMENTS JOURNAL				
APP 20300000-20100					ACCOUNTS PAYABLE			1,526.28	
07/18/2025	071825	071825			AP CASH DISBURSEMENTS JOURNAL				
APP 84000000-20100					ACCOUNTS PAYABLE			29,034.68	
07/18/2025	071825	071825			AP CASH DISBURSEMENTS JOURNAL				
APP 20900000-20100					ACCOUNTS PAYABLE			2,442.47	
07/18/2025	071825	071825			AP CASH DISBURSEMENTS JOURNAL				
APP 20500000-20100					ACCOUNTS PAYABLE			699.18	
07/18/2025	071825	071825			AP CASH DISBURSEMENTS JOURNAL				
APP 31100000-20100					ACCOUNTS PAYABLE			5,166.26	
07/18/2025	071825	071825			AP CASH DISBURSEMENTS JOURNAL				
APP 93200000-20100					ACCOUNTS PAYABLE			703.74	

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

YEAR PER JNL SRC ACCOUNT / EFF DATE	JNL DESC	REF 1	REF 2	REF 3	ACCOUNT DESC / LINE DESC	T	OB	DEBIT	CREDIT
07/18/2025 071825		071825			AP CASH DISBURSEMENTS JOURNAL				
APP 84400000-20100					ACCOUNTS PAYABLE			2,000.00	
07/18/2025 071825		071825			AP CASH DISBURSEMENTS JOURNAL				
APP 20600000-20100					ACCOUNTS PAYABLE			1,956.05	
07/18/2025 071825		071825			AP CASH DISBURSEMENTS JOURNAL				
APP 92000000-20100					ACCOUNTS PAYABLE			32,902.01	
07/18/2025 071825		071825			AP CASH DISBURSEMENTS JOURNAL				
					GENERAL LEDGER TOTAL			1,455,008.33	1,455,008.33
APP 99999999-99105					CASH DUE TO FUND 105			18,333.62	
07/18/2025 071825		071825							
APP 10500000-10101					POOLED CASH				18,333.62
07/18/2025 071825		071825							
APP 99999999-99710					CASH DUE TO FUND 710			20,753.75	
07/18/2025 071825		071825							
APP 71000000-10101					POOLED CASH				20,753.75
07/18/2025 071825		071825							
APP 99999999-99106					CASH DUE TO FUND 106			2,460.92	
07/18/2025 071825		071825							
APP 10600000-10101					POOLED CASH				2,460.92
07/18/2025 071825		071825							
APP 99999999-99927					CASH DUE TO FUND 927			38,434.90	
07/18/2025 071825		071825							
APP 92700000-10101					POOLED CASH				38,434.90
07/18/2025 071825		071825							
APP 99999999-99200					CASH DUE TO FUND 200			20,685.30	
07/18/2025 071825		071825							
APP 20000000-10101					POOLED CASH				20,685.30
07/18/2025 071825		071825							
APP 99999999-99100					CASH DUE TO FUND 100			39,733.14	
07/18/2025 071825		071825							
APP 10000000-10101					POOLED CASH				39,733.14
07/18/2025 071825		071825							
APP 99999999-99777					CASH DUE TO FUND 777			52,186.10	
07/18/2025 071825		071825							
APP 77700000-10101					POOLED CASH				52,186.10
07/18/2025 071825		071825							
APP 99999999-99820					CASH DUE TO FUND 820			8,101.23	
07/18/2025 071825		071825							
APP 82000000-10101					POOLED CASH				8,101.23
07/18/2025 071825		071825							
APP 99999999-99900					CASH DUE TO FUND 900			2,190.39	
07/18/2025 071825		071825							
APP 90000000-10101					POOLED CASH				2,190.39
07/18/2025 071825		071825							
APP 99999999-99730					CASH DUE TO FUND 730			193.99	
07/18/2025 071825		071825							

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

YEAR PER JNL SRC ACCOUNT / EFF DATE	JNL DESC	REF 1	REF 2	REF 3	ACCOUNT DESC / LINE DESC	T	OB	DEBIT	CREDIT
APP 73000000-10101					POOLED CASH				193.99
07/18/2025	071825	071825							
APP 99999999-99696					CASH DUE TO FUND 696			12.13	
07/18/2025	071825	071825							
APP 69600000-10101					POOLED CASH				12.13
07/18/2025	071825	071825							
APP 99999999-99800					CASH DUE TO FUND 800			1,087,567.09	
07/18/2025	071825	071825							
APP 80000000-10101					POOLED CASH				1,087,567.09
07/18/2025	071825	071825							
APP 99999999-99509					CASH DUE TO FUND 509			891.75	
07/18/2025	071825	071825							
APP 50900000-10101					POOLED CASH				891.75
07/18/2025	071825	071825							
APP 99999999-99208					CASH DUE TO FUND 208			2,028.59	
07/18/2025	071825	071825							
APP 20800000-10101					POOLED CASH				2,028.59
07/18/2025	071825	071825							
APP 99999999-99922					CASH DUE TO FUND 922			47,992.06	
07/18/2025	071825	071825							
APP 92200000-10101					POOLED CASH				47,992.06
07/18/2025	071825	071825							
APP 99999999-99915					CASH DUE TO FUND 915			36,974.20	
07/18/2025	071825	071825							
APP 91500000-10101					POOLED CASH				36,974.20
07/18/2025	071825	071825							
APP 99999999-99204					CASH DUE TO FUND 204			38.50	
07/18/2025	071825	071825							
APP 20400000-10101					POOLED CASH				38.50
07/18/2025	071825	071825							
APP 99999999-99203					CASH DUE TO FUND 203			1,526.28	
07/18/2025	071825	071825							
APP 20300000-10101					POOLED CASH				1,526.28
07/18/2025	071825	071825							
APP 99999999-99840					CASH DUE TO FUND 840			29,034.68	
07/18/2025	071825	071825							
APP 84000000-10101					POOLED CASH				29,034.68
07/18/2025	071825	071825							
APP 99999999-99209					CASH DUE TO FUND 209			2,442.47	
07/18/2025	071825	071825							
APP 20900000-10101					POOLED CASH				2,442.47
07/18/2025	071825	071825							
APP 99999999-99205					CASH DUE TO FUND 205			699.18	
07/18/2025	071825	071825							
APP 20500000-10101					POOLED CASH				699.18
07/18/2025	071825	071825							
APP 99999999-99311					CASH DUE TO FUND 311			5,166.26	
07/18/2025	071825	071825							
APP 31100000-10101					POOLED CASH				5,166.26

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

YEAR PER JNL SRC ACCOUNT / EFF DATE	JNL DESC	REF 1	REF 2	REF 3	ACCOUNT DESC / LINE DESC	T	OB	DEBIT	CREDIT
07/18/2025 071825		071825							
APP 99999999-99932					CASH DUE TO FUND 932			703.74	
07/18/2025 071825		071825							
APP 93200000-10101					POOLED CASH				703.74
07/18/2025 071825		071825							
APP 99999999-99844					CASH DUE TO FUND 844			2,000.00	
07/18/2025 071825		071825							
APP 84400000-10101					POOLED CASH				2,000.00
07/18/2025 071825		071825							
APP 99999999-99206					CASH DUE TO FUND 206			1,956.05	
07/18/2025 071825		071825							
APP 20600000-10101					POOLED CASH				1,956.05
07/18/2025 071825		071825							
APP 99999999-99920					CASH DUE TO FUND 920			32,902.01	
07/18/2025 071825		071825							
APP 92000000-10101					POOLED CASH				32,902.01
07/18/2025 071825		071825							
					SYSTEM GENERATED ENTRIES TOTAL			1,455,008.33	1,455,008.33
					JOURNAL 2026/01/107 TOTAL			2,910,016.66	2,910,016.66

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND / ACCOUNT	YEAR	PER	JNL	EFF DATE	ACCOUNT DESCRIPTION		DEBIT	CREDIT
100 GENERAL FUND	2026	1	107	07/18/2025				
10000000-10101					POOLED CASH			39,733.14
10000000-20100					ACCOUNTS PAYABLE		39,733.14	
						FUND TOTAL	39,733.14	39,733.14
105 GF-(SUBFUND) FIRE AUTHORITY	2026	1	107	07/18/2025				
10500000-10101					POOLED CASH			18,333.62
10500000-20100					ACCOUNTS PAYABLE		18,333.62	
						FUND TOTAL	18,333.62	18,333.62
106 USDA FOREST SERV CWDG	2026	1	107	07/18/2025				
10600000-10101					POOLED CASH			2,460.92
10600000-20100					ACCOUNTS PAYABLE		2,460.92	
						FUND TOTAL	2,460.92	2,460.92
200 CITY ADMINISTRATIVE SERVICES	2026	1	107	07/18/2025				
20000000-10101					POOLED CASH			20,685.30
20000000-20100					ACCOUNTS PAYABLE		20,685.30	
						FUND TOTAL	20,685.30	20,685.30
203 GARAGE FUND	2026	1	107	07/18/2025				
20300000-10101					POOLED CASH			1,526.28
20300000-20100					ACCOUNTS PAYABLE		1,526.28	
						FUND TOTAL	1,526.28	1,526.28
204 PROCUREMENT, CAPITAL & SP PROJ	2026	1	107	07/18/2025				
20400000-10101					POOLED CASH			38.50
20400000-20100					ACCOUNTS PAYABLE		38.50	
						FUND TOTAL	38.50	38.50
205 BILLING AND COLLECTION FUND	2026	1	107	07/18/2025				
20500000-10101					POOLED CASH			699.18
20500000-20100					ACCOUNTS PAYABLE		699.18	
						FUND TOTAL	699.18	699.18
206 PUBLIC SAFETY DISPATCH FUND	2026	1	107	07/18/2025				
20600000-10101					POOLED CASH			1,956.05
20600000-20100					ACCOUNTS PAYABLE		1,956.05	
						FUND TOTAL	1,956.05	1,956.05
208 BUILDING & GROUNDS MAINTENANCE	2026	1	107	07/18/2025				

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND / ACCOUNT	YEAR	PER	JNL	EFF DATE	ACCOUNT DESCRIPTION		DEBIT	CREDIT
20800000-10101					POOLED CASH			2,028.59
20800000-20100					ACCOUNTS PAYABLE		2,028.59	
						FUND TOTAL	2,028.59	2,028.59
209 IT FUND	2026	1	107	07/18/2025				
20900000-10101					POOLED CASH			2,442.47
20900000-20100					ACCOUNTS PAYABLE		2,442.47	
						FUND TOTAL	2,442.47	2,442.47
311 ARRC GENERAL OPERATING FUND	2026	1	107	07/18/2025				
31100000-10101					POOLED CASH			5,166.26
31100000-20100					ACCOUNTS PAYABLE		5,166.26	
						FUND TOTAL	5,166.26	5,166.26
509 S.T.P.	2026	1	107	07/18/2025				
50900000-10101					POOLED CASH			891.75
50900000-20100					ACCOUNTS PAYABLE		891.75	
						FUND TOTAL	891.75	891.75
696 SOLID WASTE MITIGATION FUND	2026	1	107	07/18/2025				
69600000-10101					POOLED CASH			12.13
69600000-20100					ACCOUNTS PAYABLE		12.13	
						FUND TOTAL	12.13	12.13
710 AMBULANCE SERVICES FUND	2026	1	107	07/18/2025				
71000000-10101					POOLED CASH			20,753.75
71000000-20100					ACCOUNTS PAYABLE		20,753.75	
						FUND TOTAL	20,753.75	20,753.75
730 CONFERENCE CENTER FUND	2026	1	107	07/18/2025				
73000000-10101					POOLED CASH			193.99
73000000-20100					ACCOUNTS PAYABLE		193.99	
						FUND TOTAL	193.99	193.99
777 AIRPORT FUND	2026	1	107	07/18/2025				
77700000-10101					POOLED CASH			52,186.10
77700000-20100					ACCOUNTS PAYABLE		52,186.10	
						FUND TOTAL	52,186.10	52,186.10
800 ELECTRIC FUND	2026	1	107	07/18/2025				
80000000-10101					POOLED CASH			1,087,567.09

A/P CASH DISBURSEMENTS JOURNAL
JOURNAL ENTRIES TO BE CREATED

FUND / ACCOUNT	YEAR	PER	JNL	EFF DATE	ACCOUNT DESCRIPTION		DEBIT	CREDIT
80000000-20100					ACCOUNTS PAYABLE		1,087,567.09	
						FUND TOTAL	1,087,567.09	1,087,567.09
820 WATER FUND	2026	1	107	07/18/2025				
82000000-10101					POOLED CASH			8,101.23
82000000-20100					ACCOUNTS PAYABLE		8,101.23	
						FUND TOTAL	8,101.23	8,101.23
840 CITY SEWER OPERATIONS FUN	2026	1	107	07/18/2025				
84000000-10101					POOLED CASH			29,034.68
84000000-20100					ACCOUNTS PAYABLE		29,034.68	
						FUND TOTAL	29,034.68	29,034.68
844 CITY SEWER CAPITAL PROJECTS FU	2026	1	107	07/18/2025				
84400000-10101					POOLED CASH			2,000.00
84400000-20100					ACCOUNTS PAYABLE		2,000.00	
						FUND TOTAL	2,000.00	2,000.00
900 SPECIAL DEPOSIT TRUST FUND	2026	1	107	07/18/2025				
90000000-10101					POOLED CASH			2,190.39
90000000-20100					ACCOUNTS PAYABLE		2,190.39	
						FUND TOTAL	2,190.39	2,190.39
915 UKIAH VALLEY FIRE DEPT	2026	1	107	07/18/2025				
91500000-10101					POOLED CASH			36,974.20
91500000-20100					ACCOUNTS PAYABLE		36,974.20	
						FUND TOTAL	36,974.20	36,974.20
920 MSWMA OPERATIONS	2026	1	107	07/18/2025				
92000000-10101					POOLED CASH			32,902.01
92000000-20100					ACCOUNTS PAYABLE		32,902.01	
						FUND TOTAL	32,902.01	32,902.01
922 MILLVIEW COUNTY WATER DISTRICT	2026	1	107	07/18/2025				
92200000-10101					POOLED CASH			47,992.06
92200000-20100					ACCOUNTS PAYABLE		47,992.06	
						FUND TOTAL	47,992.06	47,992.06
927 REDWOOD VALLEY WATER DISTR	2026	1	107	07/18/2025				
92700000-10101					POOLED CASH			38,434.90
92700000-20100					ACCOUNTS PAYABLE		38,434.90	

A/P CASH DISBURSEMENTS JOURNAL
JOURNAL ENTRIES TO BE CREATED

FUND / ACCOUNT	YEAR	PER	JNL	EFF DATE	ACCOUNT DESCRIPTION		DEBIT	CREDIT
						FUND TOTAL	38,434.90	38,434.90
932 WILLOW WATER DISTRICT OPERAT	2026	1	107	07/18/2025				
93200000-10101					POOLED CASH			703.74
93200000-20100					ACCOUNTS PAYABLE		703.74	
						FUND TOTAL	703.74	703.74
999 POOLED CASH FUND	2026	1	107	07/18/2025				
99999999-10100					US BANK CHECKING			1,455,008.33
99999999-99100					CASH DUE TO FUND 100		39,733.14	
99999999-99105					CASH DUE TO FUND 105		18,333.62	
99999999-99106					CASH DUE TO FUND 106		2,460.92	
99999999-99200					CASH DUE TO FUND 200		20,685.30	
99999999-99203					CASH DUE TO FUND 203		1,526.28	
99999999-99204					CASH DUE TO FUND 204		38.50	
99999999-99205					CASH DUE TO FUND 205		699.18	
99999999-99206					CASH DUE TO FUND 206		1,956.05	
99999999-99208					CASH DUE TO FUND 208		2,028.59	
99999999-99209					CASH DUE TO FUND 209		2,442.47	
99999999-99311					CASH DUE TO FUND 311		5,166.26	
99999999-99509					CASH DUE TO FUND 509		891.75	
99999999-99696					CASH DUE TO FUND 696		12.13	
99999999-99710					CASH DUE TO FUND 710		20,753.75	
99999999-99730					CASH DUE TO FUND 730		193.99	
99999999-99777					CASH DUE TO FUND 777		52,186.10	
99999999-99800					CASH DUE TO FUND 800		1,087,567.09	
99999999-99820					CASH DUE TO FUND 820		8,101.23	
99999999-99840					CASH DUE TO FUND 840		29,034.68	
99999999-99844					CASH DUE TO FUND 844		2,000.00	
99999999-99900					CASH DUE TO FUND 900		2,190.39	
99999999-99915					CASH DUE TO FUND 915		36,974.20	
99999999-99920					CASH DUE TO FUND 920		32,902.01	
99999999-99922					CASH DUE TO FUND 922		47,992.06	
99999999-99927					CASH DUE TO FUND 927		38,434.90	
99999999-99932					CASH DUE TO FUND 932		703.74	
						FUND TOTAL	1,455,008.33	1,455,008.33

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND			DUE TO	DUE FR
100	GENERAL FUND			39,733.14
105	GF-(SUBFUND) FIRE AUTHORITY			18,333.62
106	USDA FOREST SERV CWDG			2,460.92
200	CITY ADMINISTRATIVE SERVICES			20,685.30
203	GARAGE FUND			1,526.28
204	PROCUREMENT, CAPITAL & SP PROJ			38.50
205	BILLING AND COLLECTION FUND			699.18
206	PUBLIC SAFETY DISPATCH FUND			1,956.05
208	BUILDING & GROUNDS MAINTENANCE			2,028.59
209	IT FUND			2,442.47
311	ARRC GENERAL OPERATING FUND			5,166.26
509	S.T.P.			891.75
696	SOLID WASTE MITIGATION FUND			12.13
710	AMBULANCE SERVICES FUND			20,753.75
730	CONFERENCE CENTER FUND			193.99
777	AIRPORT FUND			52,186.10
800	ELECTRIC FUND			1,087,567.09
820	WATER FUND			8,101.23
840	CITY SEWER OPERATIONS FUN			29,034.68
844	CITY SEWER CAPITAL PROJECTS FU			2,000.00
900	SPECIAL DEPOSIT TRUST FUND			2,190.39
915	UKIAH VALLEY FIRE DEPT			36,974.20
920	MSWMA OPERATIONS			32,902.01
922	MILLVIEW COUNTY WATER DISTRICT			47,992.06
927	REDWOOD VALLEY WATER DISTR			38,434.90
932	WILLOW WATER DISTRICT OPERAT			703.74
999	POOLED CASH FUND		1,455,008.33	
		TOTAL	1,455,008.33	1,455,008.33

** END OF REPORT - Generated by MaryJo Reynolds **

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063658	07/25/2025	PRTD	15547	AT&T MOBILITY	150580	875108535X071425	07/06/2025		072525	829.83
								CHECK	3063658 TOTAL:	829.83
3063659	07/25/2025	PRTD	15547	AT&T MOBILITY	150807	832056361X071425	07/06/2025		072525	357.32
								CHECK	3063659 TOTAL:	357.32
3063660	07/25/2025	PRTD	15547	AT&T MOBILITY	150808	83218877X071425	07/06/2025		072525	247.03
								CHECK	3063660 TOTAL:	247.03
3063661	07/25/2025	PRTD	15547	AT&T MOBILITY	150809	287325300206X071425	07/06/2025		072525	36.22
								CHECK	3063661 TOTAL:	36.22
3063662	07/25/2025	PRTD	11541	AT&T	150810	00023742983	07/10/2025		072525	582.47
								CHECK	3063662 TOTAL:	582.47
3063663	07/25/2025	PRTD	11541	AT&T	150812	00023743379	07/10/2025		072525	4,594.96
								CHECK	3063663 TOTAL:	4,594.96
3063664	07/25/2025	PRTD	11541	AT&T	150813	00023780862	07/13/2025		072525	1,501.16
								CHECK	3063664 TOTAL:	1,501.16
3063665	07/25/2025	PRTD	10037	AACTION RENTS	150581	798908A-2	06/30/2025		072525	3,440.50
								CHECK	3063665 TOTAL:	3,440.50
3063666	07/25/2025	PRTD	1656	AMERICAN ASSOCIATION	150593	46724982 FY 25/26	05/02/2025		072525	176.00
								CHECK	3063666 TOTAL:	176.00
3063667	07/25/2025	PRTD	10370	ACME RIGGING COMPANY	149543	345737	06/02/2025		072525	62.35
					149544	345844	06/06/2025		072525	51.15
								CHECK	3063667 TOTAL:	113.50

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063668	07/25/2025	PRTD	10389	ADAMSON POLICE PRODU	150587	INV433313	04/24/2025		072525	891.06
								CHECK	3063668 TOTAL:	891.06
3063669	07/25/2025	PRTD	10402	ADVANCED SECURITY SY	150582	732991	05/01/2025		072525	30.50
								CHECK	3063669 TOTAL:	30.50
3063670	07/25/2025	PRTD	10601	ALL STAR FIRE EQUIPM	150588	265464	06/27/2025		072525	2,864.60
								CHECK	3063670 TOTAL:	2,864.60
3063671	07/25/2025	PRTD	10630	ALPHA ANALYTICAL LAB	149549	5063923-UKIAH	06/02/2025		072525	220.00
					149550	5063952-RVCWD	06/02/2025		072525	131.00
					149552	5064145-MCWD	06/03/2025		072525	303.00
					149553	5064367-RVCWD	06/03/2025		072525	135.00
					149555	5064377-MCWD	06/03/2025		072525	110.00
					149556	5064391-RVCWD	06/03/2025		072525	110.00
					149558	5064408-UKIAH	06/03/2025		072525	240.00
					149559	5066199-RVCWD	06/16/2025		072525	135.00
					149560	5066656-MCWD	06/18/2025		072525	350.00
					149561	5066991-RVCWD	06/20/2025		072525	657.00
					149562	5025454-MCWD	02/20/2025		072525	350.00
					150038	5065420-UKIAH	06/10/2025		072525	140.00
					150039	5067531-UKIAH	06/24/2025		072525	220.00
					150040	5067704-MCWD	06/25/2025		072525	110.00
					150113	5063908-UKIAHSTP	06/02/2025		072525	70.00
					150114	5063913-UKIAHSTP	06/02/2025		072525	95.00
					150115	5063915-UKIAHSTP	06/02/2025		072525	70.00
					150116	5064025-UKIAHSTP	06/02/2025		072525	95.00

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
					150117	5064324-UKIAHSTP	06/03/2025		072525	85.00
					150118	5064712-UKIAHSTP	06/05/2025		072525	85.00
					150121	5064731-UKIAHSTP	06/05/2025		072525	70.00
					150122	5064732-UKIAHSTP	06/05/2025		072525	95.00
					150123	5064735-UKIAHSTP	06/05/2025		072525	95.00
					150124	5064793-UKIAHSTP	06/05/2025		072525	880.00
					150125	5064823-UKIAHSTP	06/06/2025		072525	421.25
					150126	5065251-UKIAHSTP	06/10/2025		072525	590.00
					150128	5065252-UKIAHSTP	06/10/2025		072525	670.00
					150129	5065416-UKIAHSTP	06/10/2025		072525	85.00
					150130	5065450-UKIAHSTP	06/10/2025		072525	85.00
					150131	5065451-UKIAHSTP	06/10/2025		072525	85.00
					150132	5065563-UKIAHSTP	06/11/2025		072525	1,790.00
					150133	5065781-UKIAHSTP	06/12/2025		072525	416.25
					150134	5066005-UKIAHSTP	06/13/2025		072525	85.00
					150135	5066086-UKIAHSTP	06/13/2025		072525	95.00
					150137	5066157-UKIAHSTP	06/16/2025		072525	85.00
					150138	5066280-UKIAHSTP	06/16/2025		072525	1,325.00
					150139	5066831-UKIAHSTP	06/19/2025		072525	85.00
					150140	5067063-UKIAHSTP	06/20/2025		072525	95.00
					150141	5067066-UKIAHSTP	06/20/2025		072525	95.00
					150142	5067159-UKIAHSTP	06/23/2025		072525	85.00
					150143	5067432-UKIAHSTP	06/24/2025		072525	262.50
					150144	5067510-UKIAHSTP	06/24/2025		072525	85.00
					150145	5067640--UKIAHSTP	06/24/2025		072525	153.75
					150147	5068145-UKIAHSTP	06/26/2025		072525	85.00

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
					150148	5068241-UKIAHSTP	06/27/2025		072525	70.00
					150149	5068289-UKIAHSTP	06/27/2025		072525	95.00
					150150	5068292-UKIAHSTP	06/27/2025		072525	95.00
					150151	5068346-UKIAHSTP	06/27/2025		072525	85.00
					150152	5068386-UKIAHSTP	06/30/2025		072525	85.00
					150153	5068401-UKIAH	06/30/2025		072525	220.00
					150154	5068459-UKIAHSTP	06/30/2025		072525	153.75
					150304	5068404-MCWD	06/30/2025		072525	350.00
					150363	5068070-UKIAHSTP	06/26/2025		072525	262.50
					150814	5055767-UKIAHLF	05/16/2025		072525	3,379.00
					150815	5055769-UKIAHLF	05/16/2025		072525	1,619.00
								CHECK	3063671 TOTAL:	17,944.00
3063672	07/25/2025	PRTD	1272	AMAZON CAPITAL SERVI	150586	1MJD-KG1K-LVVN	06/13/2025		072525	-81.65
					150590	1QJ4-4YV6-PKVR	06/28/2025		072525	665.00
					150816	1TR1-V4HJ-3RLN	06/17/2025		072525	960.66
					150817	1TYH-HY9P-V9WC	06/28/2025		072525	181.65
					150819	17KR-PHCH-63X7	06/29/2025		072525	192.86
					150820	19PV-9FX3-XXTK	06/29/2025		072525	108.76
					150821	1DLG-YLV3-9XKM	06/30/2025		072525	700.47
					150822	1HKP-PH1C-JG79	06/30/2025		072525	22.05
					150823	1MCD-XHHJ-H7TH	06/30/2025		072525	8.70
					150824	1MYV-Y1VY-CXP9	06/30/2025		072525	80.95
					150825	16JW-XPJL-MTNT	06/28/2025		072525	261.28
								CHECK	3063672 TOTAL:	3,100.73

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063673	07/25/2025	PRTD	10750	AMERICAN ASSOCIATION	150592	Renewal FY 25/26	06/17/2025		072525	195.00
								CHECK	3063673 TOTAL:	195.00
3063674	07/25/2025	PRTD	11062	AMERICAN NATIONAL RE	150826	22852663	06/11/2025		072525	1,130.00
								CHECK	3063674 TOTAL:	1,130.00
3063675	07/25/2025	PRTD	3318	RYAN N WALLITZ	150831	31725	07/03/2025		072525	509.40
								CHECK	3063675 TOTAL:	509.40
3063676	07/25/2025	PRTD	3233	RICHARD SCOTT GALLOW	150591	JUL 27	07/17/2025		072525	7,500.00
								CHECK	3063676 TOTAL:	7,500.00
3063677	07/25/2025	PRTD	11314	AMERICAN SOCIETY OF	150832	200012210370	06/20/2025		072525	992.14
								CHECK	3063677 TOTAL:	992.14
3063678	07/25/2025	PRTD	11600	B & B INDUSTRIAL SUP	149638	288927	06/18/2025		072525	143.95
					149639	288620	06/04/2025		072525	253.18
					149640	288944	06/18/2025		072525	105.53
					149641	288990	06/19/2025		072525	214.03
					150833	289089	06/24/2025		072525	74.01
					150835	289136	06/26/2025		072525	13.04
								CHECK	3063678 TOTAL:	803.74
3063679	07/25/2025	PRTD	2275	D WALTER K BARR	150837	9122	06/27/2025		072525	150.00
								CHECK	3063679 TOTAL:	150.00
3063680	07/25/2025	PRTD	196	JOHN DEERE FINANCIAL	150677	1102110	06/24/2025		072525	1,102.97
					150678	1103141	06/26/2025		072525	96.36

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
								CHECK	3063680 TOTAL:	1,199.33
3063681	07/25/2025	PRTD	2424	BRANDON COLLIS BEGLE	150680	41	06/30/2025		072525	4,300.00
								CHECK	3063681 TOTAL:	4,300.00
3063682	07/25/2025	PRTD	2554	BRIAN STEPHEN BROWN	150681	6/3-7/9/25	07/09/2025		072525	3,102.50
								CHECK	3063682 TOTAL:	3,102.50
3063683	07/25/2025	PRTD	14067	CAROLLO ENGINEERS IN	150903	FB38925	07/11/2025		072525	89,379.25
								CHECK	3063683 TOTAL:	89,379.25
3063684	07/25/2025	PRTD	2031	TC BLAIR INC	150840	CG500195	06/25/2025		072525	280.00
								CHECK	3063684 TOTAL:	280.00
3063685	07/25/2025	PRTD	18658	CARTER GRISSOM	150594	JUL 27	07/01/2025		072525	500.00
								CHECK	3063685 TOTAL:	500.00
3063686	07/25/2025	PRTD	1974	CINTAS CORPORATION	149665	4233074377	06/09/2025		072525	52.33
					149666	4232326917	06/02/2025		072525	54.25
					149667	4232486078	06/03/2025		072525	267.87
					149668	4233186103	06/10/2025		072525	134.33
					149674	4233774418	06/16/2025		072525	54.25
					149677	4233942216	06/17/2025		072525	316.83
					150841	4234514390	06/23/2025		072525	52.33
					150842	4234649379	06/24/2025		072525	134.33
					150843	4235264224	06/30/2025		072525	54.25
								CHECK	3063686 TOTAL:	1,120.77
3063687	07/25/2025	PRTD	1974	CINTAS CORPORATION	149669	5275577011	06/13/2025		072525	65.31
					149672	5275577007	06/13/2025		072525	90.29

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
					149675	5275851316	06/16/2025		072525	300.14
					149676	5275851317	06/16/2025		072525	99.72
								CHECK	3063687 TOTAL:	555.46
3063688	07/25/2025	PRTD	2356	CALIFORNIA INTERGOVE	150844	INV-2743	06/30/2025		072525	37,327.48
								CHECK	3063688 TOTAL:	37,327.48
3063689	07/25/2025	PRTD	28800	CITY OF UKIAH	150845	99946-001 MAY 25	07/01/2025		072525	12,163.60
					150846	301382-001 MAY 25	07/01/2025		072525	148.81
					150847	8833.1	07/03/2025		072525	-47,362.69
					150848	8833.2	07/03/2025		072525	47,362.69
					150849	8834.2	07/03/2025		072525	36,555.94
					150852	8834.1	07/03/2025		072525	-36,555.94
								CHECK	3063689 TOTAL:	12,312.41
3063690	07/25/2025	PRTD	28800	CITY OF UKIAH	150675	MAY 25	06/28/2025		072525	262,166.99
								CHECK	3063690 TOTAL:	262,166.99
3063691	07/25/2025	PRTD	1929	CIVICPLUS	150672	337992	07/08/2025		072525	22,375.03
								CHECK	3063691 TOTAL:	22,375.03
3063692	07/25/2025	PRTD	14548	CODE PUBLISHING COMP	150887	1002098009	06/26/2025		072525	688.56
								CHECK	3063692 TOTAL:	688.56
3063693	07/25/2025	PRTD	2581	CONNECTWISE LLC	150853	INV01411678	06/30/2025		072525	700.07
								CHECK	3063693 TOTAL:	700.07
3063694	07/25/2025	PRTD	3113	CENTER FOR PUBLIC SA	150904	2527	03/13/2025		072525	21,740.00
					150905	2548	04/03/2025		072525	7,172.26

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
					150906	2575	07/23/2025		072525	21,740.00
								CHECK	3063694 TOTAL:	50,652.26
3063695	07/25/2025	PRTD	15874	DELL MARKETING LP	150856	10818436908	06/05/2025		072525	3,323.30
								CHECK	3063695 TOTAL:	3,323.30
3063696	07/25/2025	PRTD	16402	MCCI LLC	150862	19852	07/07/2025		072525	3,727.50
								CHECK	3063696 TOTAL:	3,727.50
3063697	07/25/2025	PRTD	17998	EFFICIENCY SERVICES	150865	00024838	06/30/2025		072525	4,038.92
								CHECK	3063697 TOTAL:	4,038.92
3063698	07/25/2025	PRTD	2197	E SOURCE COMPANIES L	150859	25122	06/30/2025		072525	8,160.00
								CHECK	3063698 TOTAL:	8,160.00
3063699	07/25/2025	PRTD	192	VIOLATION PROCESSING	150869	T592593910382	06/17/2025		072525	19.25
					150870	T712589716196	07/15/2025		072525	23.00
								CHECK	3063699 TOTAL:	42.25
3063700	07/25/2025	PRTD	2462	FLOCK GROUP INC	150882	INV-67833	06/25/2025		072525	6,000.00
					150883	INV-68601	07/01/2025		072525	35,000.00
								CHECK	3063700 TOTAL:	41,000.00
3063701	07/25/2025	PRTD	17843	FRIEDMANS HOME IMPRO	150712	INV20288069	05/23/2025		072525	76.71
					150724	INT-089146	05/31/2025		072525	10.75
					150727	INV20338900	06/02/2025		072525	31.26
					150731	INV20339035	06/02/2025		072525	40.74
					150732	INV20339926	06/02/2025		072525	72.48
					150733	INV20340173	06/02/2025		072525	7.72
					150735	INV20340834	06/02/2025		072525	117.30

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
					150737	INV20344848	06/03/2025		072525	211.11
					150738	INV20345890	06/03/2025		072525	126.46
					150739	INV20346121	06/03/2025		072525	133.48
					150746	INV20347177	06/03/2025		072525	27.74
					150749	INV20347648	06/03/2025		072525	75.26
					150752	INV20350408	06/04/2025		072525	10.32
					150757	INV20355199	06/05/2025		072525	64.24
					150760	INV20357182	06/05/2025		072525	17.52
					150762	INV20361593	06/06/2025		072525	501.35
					150763	INV20362413	06/06/2025		072525	405.72
					150768	INV20375366	06/09/2025		072525	9.22
					150769	INV20376156	06/09/2025		072525	1,331.98
					150770	INV20380128	06/10/2025		072525	81.50
					150771	INV20380513	06/10/2025		072525	20.59
					150772	INV20382836	06/10/2025		072525	33.34
					150773	INV20383903	06/10/2025		072525	122.22
					150774	INV20386447	06/11/2025		072525	55.13
					150775	INV20386609	06/11/2025		072525	41.86
					150776	INV20389543	06/11/2025		072525	44.17
					150777	INV20389778	06/11/2025		072525	17.38
					150779	INV20391100	06/12/2025		072525	20.38
					150783	INV20394762	06/12/2025		072525	19.33
					150786	INV20397088	06/13/2025		072525	12.48
					150788	INV20397183	06/13/2025		072525	95.24
					150791	INV20418160	06/17/2025		072525	2,116.53
					150804	INV20418245	06/17/2025		072525	1,848.70

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CASH ACCOUNT: 99999999 10100 US BANK CHECKING

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				150805	INV20420900	06/18/2025		072525	8.73
				150806	INV20421802	06/18/2025		072525	15.85
				150811	INV20421974	06/18/2025		072525	28.97
				150827	INV20423895	06/18/2025		072525	103.74
				150828	INV20424155	06/18/2025		072525	12.96
				150830	INV20425751	06/19/2025		072525	87.08
				150834	INV20434272	06/20/2025		072525	2,354.78
				150836	INV20434342	06/20/2025		072525	509.53
				150854	INV20437515	06/21/2025		072525	94.57
				150855	INV20437835	06/21/2025		072525	47.03
				150861	CN-704706	06/23/2025		072525	-959.46
				150864	INV20446051	06/23/2025		072525	119.72
				150866	INV20446058	06/23/2025		072525	21.97
				150867	INV20446662	06/23/2025		072525	959.46
				150868	INV20446935	06/23/2025		072525	53.63
				150871	INV20454602	06/24/2025		072525	100.92
				150874	INV20456183	06/25/2025		072525	27.37
				150875	INV20456347	06/25/2025		072525	45.89
				150877	INV20459447	06/25/2025		072525	188.07
				150880	INV20461900	06/26/2025		072525	29.07
				150884	INV20461995	06/26/2025		072525	12.78
				150885	INV20464505	06/26/2025		072525	24.38
				150886	INV20465420	06/26/2025		072525	85.22
				150889	INV20468608	06/27/2025		072525	1,352.90
				150891	INV20470269	06/27/2025		072525	667.66
				150892	INV20481789	06/30/2025		072525	143.01

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CASH ACCOUNT: 99999999 10100 US BANK CHECKING

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								CHECK	3063701 TOTAL:	13,936.04
3063702	07/25/2025	PRTD	17967	GARTON TRACTOR INC	149757	P1868107	06/10/2025		072525	32.13
								CHECK	3063702 TOTAL:	32.13
3063703	07/25/2025	PRTD	1438	GHILOTTI CONSTRUCTIO	150902	6071*22	06/30/2025		072525	643,546.56
								CHECK	3063703 TOTAL:	643,546.56
3063704	07/25/2025	PRTD	18533	GRAINGER INC	150876	9558032026	06/30/2025		072525	31.60
								CHECK	3063704 TOTAL:	31.60
3063705	07/25/2025	PRTD	18533	GRAINGER INC	149771	9541771326	06/16/2025		072525	428.22
					149772	9541983145	06/16/2025		072525	2,121.83
					150233	9545397375	06/19/2025		072525	1,072.39
								CHECK	3063705 TOTAL:	3,622.44
3063706	07/25/2025	PRTD	18534	GRANITE CONSTRUCTION	149992	2971778	06/26/2025		072525	535,777.09
								CHECK	3063706 TOTAL:	535,777.09
3063707	07/25/2025	PRTD	2960	GREAT REDWOOD TRAIL	150879	2024-385	06/16/2025		072525	75.00
								CHECK	3063707 TOTAL:	75.00
3063708	07/25/2025	PRTD	1477	LYMAN GROUP INC	149774	1960300	06/06/2025		072525	203.24
								CHECK	3063708 TOTAL:	203.24
3063709	07/25/2025	PRTD	18902	HANSEL AUTO GROUP	149790	1320502	06/05/2025		072525	608.00
					149791	1320706	06/10/2025		072525	263.65
					149795	1320821	06/10/2025		072525	112.94
					149796	1320936	06/12/2025		072525	88.59
					150214	CM1319554	06/11/2025		072525	-400.00

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CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
					150215	1321544	06/23/2025		072525	152.33
					150216	1321662	06/25/2025		072525	176.62
								CHECK	3063709 TOTAL:	1,002.13
3063710	07/25/2025	PRTD	1768	HILDEBRAND CONSULTIN	150208	738	06/30/2025		072525	8,000.00
								CHECK	3063710 TOTAL:	8,000.00
3063711	07/25/2025	PRTD	19614	HOME DEPOT CREDIT SE	150653	4014305	06/16/2025		072525	49.77
					150656	4023496	06/16/2025		072525	35.85
					150657	4032634	06/16/2025		072525	45.50
					150658	3284844	06/17/2025		072525	35.13
					150660	2284905	06/18/2025		072525	11.87
					150662	84135	06/20/2025		072525	792.75
					150664	7024013	06/23/2025		072525	23.34
					150665	7070018	06/23/2025		072525	223.04
					150669	5033641	06/25/2025		072525	1,238.15
					150670	4010603	06/26/2025		072525	11.41
					150671	4280224	06/26/2025		072525	32.76
					150673	4280225	06/26/2025		072525	10.92
					150674	4354670	06/26/2025		072525	306.09
					150676	3010787	06/27/2025		072525	516.67
					150682	3900208	06/27/2025		072525	325.54
					150694	24684	06/30/2025		072525	8.45
					150695	9034280	07/01/2025		072525	33.65
					150698	8011453	07/02/2025		072525	63.35
					150699	2012150	07/08/2025		072525	7.87
					150700	2025361	07/08/2025		072525	167.55

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CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
					150701	2035097	07/08/2025		072525	5.71
					150704	7034605	07/03/2025		072525	6.50
					150705	3034976	07/07/2025		072525	194.89
					150707	3070679	07/07/2025		072525	339.06
					150708	2012192	07/08/2025		072525	206.53
					150710	1012274	07/09/2025		072525	91.11
					150803	1192755	01/20/2025		072525	-3.26
								CHECK	3063711 TOTAL:	4,780.20
3063712	07/25/2025	PRTD	936	JACK HENRY & ASSOCIA	150888	5001625	06/30/2025		072525	250.00
								CHECK	3063712 TOTAL:	250.00
3063713	07/25/2025	PRTD	10434	JOHN AGUILAR	150890	38595 - 25/28	05/29/2025		072525	90.00
								CHECK	3063713 TOTAL:	90.00
3063714	07/25/2025	PRTD	3187	JOHN'S DAIRY EQUIPME	150894	SAL5082	07/10/2025		072525	4,442.30
					150896	SAL4045	06/12/2025		072525	4,442.30
								CHECK	3063714 TOTAL:	8,884.60
3063715	07/25/2025	PRTD	17660	KEN FOWLER MOTORS IN	149976	52226	06/17/2025		072525	204.73
								CHECK	3063715 TOTAL:	204.73
3063716	07/25/2025	PRTD	2269	KP PUBLIC AFFAIRS LL	150897	7013614	05/31/2025		072525	10,000.00
								CHECK	3063716 TOTAL:	10,000.00
3063717	07/25/2025	PRTD	36115	LAURENCE THOMPSON	150595	JUL 27	07/01/2025		072525	2,400.00
								CHECK	3063717 TOTAL:	2,400.00

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CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063718	07/25/2025	PRTD	22850	LIFE ASSIST INC	150899	1610628	06/18/2025		072525	88.80
								CHECK	3063718 TOTAL:	88.80
3063719	07/25/2025	PRTD	22970	SCP DISTRIBUTORS LLC	150901	SL053302	06/02/2025		072525	2,596.04
								CHECK	3063719 TOTAL:	2,596.04
3063720	07/25/2025	PRTD	14487	MARK CLEMENTI PHD	150597	6-15-25FD	06/15/2025		072525	844.00
								CHECK	3063720 TOTAL:	844.00
3063721	07/25/2025	PRTD	15720	MARK DAVIS INSURANCE	150596	852592120 FY 25/26	05/05/2025		072525	166.00
								CHECK	3063721 TOTAL:	166.00
3063722	07/25/2025	PRTD	3325	MARK SPARSO	150599	P-760	07/17/2025		072525	2,000.00
					150600	P-759	07/17/2025		072525	2,000.00
								CHECK	3063722 TOTAL:	4,000.00
3063723	07/25/2025	PRTD	2747	MAVERICK NETWORKS, I	150601	2501558	06/25/2025		072525	200.00
					150603	2501583	07/01/2025		072525	200.00
								CHECK	3063723 TOTAL:	400.00
3063724	07/25/2025	PRTD	24170	MENDOCINO COUNTY AUD	150605	2519	06/30/2025	48854	072525	9,767.40
								CHECK	3063724 TOTAL:	9,767.40
3063725	07/25/2025	PRTD	2286	MICHAEL BAKER	150607	P30013	06/27/2025		072525	250.00
								CHECK	3063725 TOTAL:	250.00
3063726	07/25/2025	PRTD	2639	MICHAEL HOOVER	150606	BA FY 25/26	07/17/2025		072525	156.42
								CHECK	3063726 TOTAL:	156.42

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CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
3063727	07/25/2025	PRTD	898	LAKE PARTS INC	149618	391460	06/01/2025		072525	233.53
					149619	391954	06/05/2025		072525	95.17
					149620	392297	06/09/2025		072525	7.82
					150179	393336	06/18/2025		072525	59.66
					150180	392511	06/11/2025		072525	15.78
					150183	393496	06/19/2025		072525	8.27
					150184	393502	06/19/2025		072525	12.28
					150608	393219	06/17/2025		072525	3.69
								CHECK	3063727 TOTAL:	436.20
3063728	07/25/2025	PRTD	274	NOR-CAL RECYCLED ROC	150609	29103	06/18/2025		072525	275.99
								CHECK	3063728 TOTAL:	275.99
3063729	07/25/2025	PRTD	107	OCCU-MED LTD	150610	0725511	06/30/2025		072525	2,164.10
								CHECK	3063729 TOTAL:	2,164.10
3063730	07/25/2025	PRTD	26696	OFFICE DEPOT INC	150611	426242873001	06/05/2025		072525	32.41
					150612	426242875001	06/05/2025		072525	32.16
					150613	422726081001	06/23/2025		072525	75.61
					150614	428661912001	06/16/2025		072525	61.24
					150615	428957275001	06/18/2025		072525	51.90
					150616	428200434001	06/11/2025		072525	86.01
					150617	426240563001	06/05/2025		072525	109.08
					150618	426242874001	06/05/2025		072525	49.68
					150620	426142413001	06/05/2025		072525	133.95
					150621	426145034001	06/05/2025		072525	94.17

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CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
								CHECK	3063730 TOTAL:	726.21
3063731	07/25/2025	PRTD	26709	OKONITE COMPANY,THE	150619	2JD70	06/26/2025	48834	072525	64,843.28
								CHECK	3063731 TOTAL:	64,843.28
3063732	07/25/2025	PRTD	26727	ONLINE INFORMATION S	150622	1333880	06/30/2025		072525	281.60
					150623	1333880.1	06/30/2025		072525	-240.16
								CHECK	3063732 TOTAL:	41.44
3063733	07/25/2025	PRTD	26719	OPPERMAN & SON INC	149663	01P81985	06/04/2025		072525	251.15
								CHECK	3063733 TOTAL:	251.15
3063734	07/25/2025	PRTD	27116	OWEN EQUIPMENT SALES	150635	00067743	06/27/2025		072525	2,266.56
								CHECK	3063734 TOTAL:	2,266.56
3063735	07/25/2025	PRTD	1925	PAMELA WHITAKER	150636	6/10-30/25	06/26/2025		072525	650.00
								CHECK	3063735 TOTAL:	650.00
3063736	07/25/2025	PRTD	28755	PFM ASSET MANAGEMENT	150637	14829652	07/15/2025		072525	2,136.05
								CHECK	3063736 TOTAL:	2,136.05
3063737	07/25/2025	PRTD	27260	PG&E CO	150625	1522-8 JUN 25	07/03/2025		072525	184.73
					150626	6124-2 JUN 25	07/03/2025		072525	1,862.10
					150627	6833-2 JUN 25	07/10/2025		072525	998.05
					150628	3822-5 JUN 25	07/15/2025		072525	17,214.27
					150629	8716-1 JUN 25	07/15/2025		072525	16,839.82
					150630	6066-1 JUN 25	07/15/2025		072525	195.27
					150631	4689-3 JUN 25	07/07/2025		072525	419.27
					150632	2653-6 JUN 25	07/09/2025		072525	3,433.27
					150633	4919-0 JUN 25	07/08/2025		072525	47,869.93

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					150634	7482-8 JUN 28	06/24/2025		072525	1,035.49
					150706	7362-5 JUN 25	07/09/2025		072525	36.25
								CHECK	3063737 TOTAL:	90,088.45
3063738	07/25/2025	PRTD	1518	REXEL USA INC	150638	6J02813	06/13/2025		072525	30.18
					150709	6I32824	06/04/2025		072525	86.36
								CHECK	3063738 TOTAL:	116.54
3063739	07/25/2025	PRTD	2946	RADIUS TELEMATICS LL	150639	INV183436	06/28/2025		072525	180.00
								CHECK	3063739 TOTAL:	180.00
3063740	07/25/2025	PRTD	29100	RAINBOW AGRICULTURAL	150640	81244/H	06/24/2025		072525	91.42
								CHECK	3063740 TOTAL:	91.42
3063741	07/25/2025	PRTD	29995	NICK BARBIERI TRUCKI	150641	1219410-IN	07/02/2024		072525	480.69
								CHECK	3063741 TOTAL:	480.69
3063742	07/25/2025	PRTD	2598	REDWOOD WASTE SOLUTI	150642	176980577U039	07/01/2025		072525	85.48
					150643	176980670U039	07/01/2025		072525	85.48
								CHECK	3063742 TOTAL:	170.96
3063743	07/25/2025	PRTD	2866	REEP FIRE PROTECTION	150644	3773	06/24/2025	48798	072525	7,397.25
								CHECK	3063743 TOTAL:	7,397.25
3063744	07/25/2025	PRTD	2442	STEVEN RATLEY	150647	2202-24	07/01/2025		072525	125.00
								CHECK	3063744 TOTAL:	125.00
3063745	07/25/2025	PRTD	30842	RINEHART OIL INC	150648	CL4309	06/15/2025		072525	205.39
					150649	CL47433	06/30/2025		072525	3,962.64
					150650	CL47446	06/30/2025		072525	159.84

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CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
					150651	CL47449	06/30/2025		072525	187.59
					150652	CL47452	06/30/2025		072525	136.69
					150654	CL47451	06/30/2025		072525	513.10
					150713	CL47308	06/15/2025		072525	91.71
								CHECK	3063745 TOTAL:	5,256.96
3063746	07/25/2025	PRTD	1239	ROGINA WATER COMPANY	150659	14355-0 jun 25	06/24/2025		072525	45.53
								CHECK	3063746 TOTAL:	45.53
3063747	07/25/2025	PRTD	3262	ROSE MARY MCKENZIE	150661	14683-002 1	06/10/2025		072525	1,572.00
								CHECK	3063747 TOTAL:	1,572.00
3063748	07/25/2025	PRTD	26221	RYAN NELSON	150663	10015074	07/16/2025		072525	50.00
								CHECK	3063748 TOTAL:	50.00
3063749	07/25/2025	PRTD	32040	SANTA ROSA JUNIOR CO	150697	AR25-01850	06/30/2025		072525	143.00
								CHECK	3063749 TOTAL:	143.00
3063750	07/25/2025	PRTD	32411	ZAB ENTERPRISES INC	150667	JUN 25 CC	06/30/2025		072525	1,799.80
								CHECK	3063750 TOTAL:	1,799.80
3063751	07/25/2025	PRTD	40447	SHERI MANNION	150668	27	07/21/2025		072525	91.19
								CHECK	3063751 TOTAL:	91.19
3063752	07/25/2025	PRTD	39010	SOLID WASTES SYSTEMS	150778	JUN 25	07/23/2025		072525	64,468.10
								CHECK	3063752 TOTAL:	64,468.10
3063753	07/25/2025	PRTD	2574	SOUTHERN TIRE MART L	150683	7740009905	04/28/2025		072525	438.04
					150684	7740010308	05/28/2025		072525	90.00
					150685	7740010315	05/29/2025		072525	1,333.97

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CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
					150686	7740010486	06/12/2025		072525	50.59
					150687	7740010523	06/17/2025		072525	1,822.10
					150688	7740010593	06/24/2025		072525	1,553.35
					150689	7740010683	06/30/2025		072525	198.11
					150690	7740010690	06/30/2025		072525	198.11
								CHECK	3063753 TOTAL:	5,684.27
3063754	07/25/2025	PRTD	35055	DONALD A KNIGHT	150691	1668	04/09/2025		072525	740.35
								CHECK	3063754 TOTAL:	740.35
3063755	07/25/2025	PRTD	12719	STAPLES CREDIT PLAN	150702	6035219080	06/25/2025		072525	75.30
					150703	6035219082	06/25/2025		072525	48.96
								CHECK	3063755 TOTAL:	124.26
3063756	07/25/2025	PRTD	166	CA DIVISION OF THE S	150858	2ND QTR 25	07/22/2025		072525	55.50
								CHECK	3063756 TOTAL:	55.50
3063757	07/25/2025	PRTD	15984	DEPARTMENT OF JUSTIC	150692	809095	04/03/2025		072525	49.00
					150693	829792	06/30/2025		072525	49.00
								CHECK	3063757 TOTAL:	98.00
3063758	07/25/2025	PRTD	2188	COLLEEN HOLLY HUNT	150696	02607	07/01/2025		072525	8,468.63
								CHECK	3063758 TOTAL:	8,468.63
3063759	07/25/2025	PRTD	3329	REMEDIOS NUNEZ	150715	JULY 12, 2025	07/12/2025		072525	660.00
								CHECK	3063759 TOTAL:	660.00
3063760	07/25/2025	PRTD	36003	TGIF REPAIRS INC	150734	7441	06/25/2025		072525	262.50

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
								CHECK	3063760 TOTAL:	262.50
3063761	07/25/2025	PRTD	36126	THURSTON CHEVROLET T	150719	266446	06/16/2025		072525	3.63
					150722	366608	06/17/2025		072525	7.21
								CHECK	3063761 TOTAL:	10.84
3063762	07/25/2025	PRTD	1197	THURSTON CHRYSLER DO	150720	27715	06/05/2025		072525	-13.31
					150721	27697	06/02/2025		072525	228.92
					150723	27804	06/23/2025		072525	79.19
					150725	27709	06/04/2025		072525	114.44
								CHECK	3063762 TOTAL:	409.24
3063763	07/25/2025	PRTD	36862	TUFTS POLYGRAPH & IN	150728	2025-1069(A)	07/14/2025		072525	1,250.00
								CHECK	3063763 TOTAL:	1,250.00
3063764	07/25/2025	PRTD	36874	TURF STAR INC	150729	INV084775	04/30/2025		072525	271.72
								CHECK	3063764 TOTAL:	271.72
3063765	07/25/2025	PRTD	37590	LAKE COUNTY RECORD B	150743	0006902561	06/12/2025		072525	64.63
								CHECK	3063765 TOTAL:	64.63
3063766	07/25/2025	PRTD	37590	UKIAH DAILY JOURNAL	150730	0006900407	06/02/2025		072525	284.49
					150736	0006900663	06/03/2025		072525	185.51
					150740	0006901329	06/05/2025		072525	242.59
					150741	0006901559	06/06/2025		072525	66.22
					150742	0006901561	06/06/2025		072525	78.93
					150744	0006904002	06/19/2025		072525	82.11
					150745	000694728	06/24/2025		072525	48.75

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
								CHECK	3063766 TOTAL:	988.60
3063767	07/25/2025	PRTD	38530	UKIAH PAPER SUPPLY	150747	569292	06/23/2025		072525	159.90
					150748	569393	06/25/2025		072525	152.37
					150750	569455	06/26/2025		072525	215.40
					150751	569472	06/27/2025		072525	402.95
					150753	569544	06/30/2025		072525	567.81
					150754	569585	07/01/2025		072525	599.58
					150755	569695	07/07/2025		072525	99.95
					150756	569740	07/08/2025		072525	262.59
					150758	569837	07/10/2025		072525	270.08
					150759	569867	07/10/2025		072525	31.27
					150761	569950	07/14/2025		072525	312.65
					150764	570003	07/16/2025		072525	52.33
					150765	570016	07/16/2025		072525	95.40
					150766	570146	07/21/2025		072525	198.32
								CHECK	3063767 TOTAL:	3,420.60
3063768	07/25/2025	PRTD	39043	UKIAH TROPHIES & GIF	150767	0002944	06/20/2025		072525	169.71
								CHECK	3063768 TOTAL:	169.71
3063769	07/25/2025	PRTD	59	UKIAH WASTE SOLUTION	150781	176969769U034	07/01/2025		072525	166.53
					150782	176969815U034	07/01/2025		072525	332.00
								CHECK	3063769 TOTAL:	498.53
3063770	07/25/2025	PRTD	39633	UNIVAR USA INC	150784	53053735	05/29/2025		072525	17,187.17
					150785	53085073	06/11/2025		072525	15,813.83
					150787	53060186	06/02/2025		072525	4,410.01

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
					150789	53105912	06/19/2025		072525	16,865.86
								CHECK	3063770 TOTAL:	54,276.87
3063771	07/25/2025	PRTD	39798	HD SUPPLY INC	150790	INV00718990	05/22/2025		072525	1,308.28
								CHECK	3063771 TOTAL:	1,308.28
3063772	07/25/2025	PRTD	2346	WILBUR-ELLIS HOLDING	150792	17096291	04/28/2025		072525	511.60
					150793	17096292	04/28/2025		072525	130.65
								CHECK	3063772 TOTAL:	642.25
3063773	07/25/2025	PRTD	42070	XEROX CORP	150794	023828920	07/01/2025		072525	486.56
					150795	023828921	07/01/2025		072525	458.37
					150796	023828922	07/01/2025		072525	793.87
					150797	023828923	07/01/2025		072525	689.29
					150798	023828924	07/01/2025		072525	175.92
					150799	023828956	07/01/2025		072525	325.09
					150800	023920553	07/01/2025		072525	157.88
					150801	023920554	07/01/2025		072525	186.99
					150802	023920557	07/01/2025		072525	164.01
								CHECK	3063773 TOTAL:	3,437.98

NUMBER OF CHECKS 116 *** CASH ACCOUNT TOTAL *** 2,174,757.29

	COUNT	AMOUNT
TOTAL PRINTED CHECKS	116	2,174,757.29

*** GRAND TOTAL *** 2,174,757.29

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

CLERK: mreynolds

YEAR PER JNL / SRC ACCOUNT / EFF DATE	JNL DESC	REF 1	REF 2	REF 3	ACCOUNT DESC / LINE DESC	T	OB	DEBIT	CREDIT
2026 1 183									
APP 84000000-20100					ACCOUNTS PAYABLE			119,464.12	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 99999999-10100					US BANK CHECKING				2,174,757.29
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 20900000-20100					ACCOUNTS PAYABLE			8,163.84	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 10000000-20100					ACCOUNTS PAYABLE			109,903.36	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 80000000-20100					ACCOUNTS PAYABLE			71,079.57	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 82000000-20100					ACCOUNTS PAYABLE			113,946.20	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 92200000-20100					ACCOUNTS PAYABLE			6,853.45	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 92700000-20100					ACCOUNTS PAYABLE			73,335.86	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 93200000-20100					ACCOUNTS PAYABLE			18.40	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 77700000-20100					ACCOUNTS PAYABLE			5,677.57	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 20600000-20100					ACCOUNTS PAYABLE			317.52	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 10500000-20100					ACCOUNTS PAYABLE			32,367.38	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 71000000-20100					ACCOUNTS PAYABLE			37,068.36	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 70000000-20100					ACCOUNTS PAYABLE			5,806.61	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 90000000-20100					ACCOUNTS PAYABLE			12,195.70	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 20300000-20100					ACCOUNTS PAYABLE			2,081.56	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 20800000-20100					ACCOUNTS PAYABLE			41,318.93	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 83000000-20100					ACCOUNTS PAYABLE			750,585.39	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 20100000-20100					ACCOUNTS PAYABLE			13,737.73	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 20200000-20100					ACCOUNTS PAYABLE			23,589.75	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 10600000-20100					ACCOUNTS PAYABLE			8,550.50	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 64000000-20100					ACCOUNTS PAYABLE			770.79	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 72000000-20100					ACCOUNTS PAYABLE			43,482.27	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 73000000-20100					ACCOUNTS PAYABLE			7,247.07	

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

YEAR PER JNL SRC ACCOUNT / EFF DATE	JNL DESC	REF 1	REF 2	REF 3	ACCOUNT DESC / LINE DESC	T	OB	DEBIT	CREDIT
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 80500000-20100					ACCOUNTS PAYABLE			12,225.53	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 20000000-20100					ACCOUNTS PAYABLE			41,200.20	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 20500000-20100					ACCOUNTS PAYABLE			11,781.95	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 80600000-20100					ACCOUNTS PAYABLE			5,610.92	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 80100000-20100					ACCOUNTS PAYABLE			137.48	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 51100000-20100					ACCOUNTS PAYABLE			535,777.09	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 84400000-20100					ACCOUNTS PAYABLE			4,000.00	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 91500000-20100					ACCOUNTS PAYABLE			9,767.40	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 90200000-20100					ACCOUNTS PAYABLE			64,468.10	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 31100000-20100					ACCOUNTS PAYABLE			918.41	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
APP 95000000-20100					ACCOUNTS PAYABLE			1,308.28	
07/25/2025	072525	072525			AP CASH DISBURSEMENTS JOURNAL				
					GENERAL LEDGER TOTAL			2,174,757.29	2,174,757.29
APP 99999999-99840					CASH DUE TO FUND 840			119,464.12	
07/25/2025	072525	072525							
APP 84000000-10101					POOLED CASH				119,464.12
07/25/2025	072525	072525							
APP 99999999-99209					CASH DUE TO FUND 209			8,163.84	
07/25/2025	072525	072525							
APP 20900000-10101					POOLED CASH				8,163.84
07/25/2025	072525	072525							
APP 99999999-99100					CASH DUE TO FUND 100			109,903.36	
07/25/2025	072525	072525							
APP 10000000-10101					POOLED CASH				109,903.36
07/25/2025	072525	072525							
APP 99999999-99800					CASH DUE TO FUND 800			71,079.57	
07/25/2025	072525	072525							
APP 80000000-10101					POOLED CASH				71,079.57
07/25/2025	072525	072525							
APP 99999999-99820					CASH DUE TO FUND 820			113,946.20	
07/25/2025	072525	072525							
APP 82000000-10101					POOLED CASH				113,946.20
07/25/2025	072525	072525							
APP 99999999-99922					CASH DUE TO FUND 922			6,853.45	
07/25/2025	072525	072525							

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

YEAR PER JNL SRC ACCOUNT / EFF DATE	JNL DESC	REF 1	REF 2	REF 3	ACCOUNT DESC / LINE DESC	T	OB	DEBIT	CREDIT
APP 92200000-10101					POOLED CASH				6,853.45
07/25/2025	072525	072525							
APP 99999999-99927					CASH DUE TO FUND 927			73,335.86	
07/25/2025	072525	072525							
APP 92700000-10101					POOLED CASH				73,335.86
07/25/2025	072525	072525							
APP 99999999-99932					CASH DUE TO FUND 932			18.40	
07/25/2025	072525	072525							
APP 93200000-10101					POOLED CASH				18.40
07/25/2025	072525	072525							
APP 99999999-99777					CASH DUE TO FUND 777			5,677.57	
07/25/2025	072525	072525							
APP 77700000-10101					POOLED CASH				5,677.57
07/25/2025	072525	072525							
APP 99999999-99206					CASH DUE TO FUND 206			317.52	
07/25/2025	072525	072525							
APP 20600000-10101					POOLED CASH				317.52
07/25/2025	072525	072525							
APP 99999999-99105					CASH DUE TO FUND 105			32,367.38	
07/25/2025	072525	072525							
APP 10500000-10101					POOLED CASH				32,367.38
07/25/2025	072525	072525							
APP 99999999-99710					CASH DUE TO FUND 710			37,068.36	
07/25/2025	072525	072525							
APP 71000000-10101					POOLED CASH				37,068.36
07/25/2025	072525	072525							
APP 99999999-99700					CASH DUE TO FUND 700			5,806.61	
07/25/2025	072525	072525							
APP 70000000-10101					POOLED CASH				5,806.61
07/25/2025	072525	072525							
APP 99999999-99900					CASH DUE TO FUND 900			12,195.70	
07/25/2025	072525	072525							
APP 90000000-10101					POOLED CASH				12,195.70
07/25/2025	072525	072525							
APP 99999999-99203					CASH DUE TO FUND 203			2,081.56	
07/25/2025	072525	072525							
APP 20300000-10101					POOLED CASH				2,081.56
07/25/2025	072525	072525							
APP 99999999-99208					CASH DUE TO FUND 208			41,318.93	
07/25/2025	072525	072525							
APP 20800000-10101					POOLED CASH				41,318.93
07/25/2025	072525	072525							
APP 99999999-99830					CASH DUE TO FUND 830			750,585.39	
07/25/2025	072525	072525							
APP 83000000-10101					POOLED CASH				750,585.39
07/25/2025	072525	072525							
APP 99999999-99201					CASH DUE TO FUND 201			13,737.73	
07/25/2025	072525	072525							
APP 20100000-10101					POOLED CASH				13,737.73

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

YEAR PER JNL SRC ACCOUNT	EFF DATE	JNL DESC	REF 1	REF 2	REF 3	ACCOUNT DESC / LINE DESC	T	OB	DEBIT	CREDIT
	07/25/2025	072525	072525							
APP 99999999-99202	07/25/2025	072525	072525			CASH DUE TO FUND 202			23,589.75	
APP 20200000-10101	07/25/2025	072525	072525			POOLED CASH				23,589.75
APP 99999999-99106	07/25/2025	072525	072525			CASH DUE TO FUND 106			8,550.50	
APP 10600000-10101	07/25/2025	072525	072525			POOLED CASH				8,550.50
APP 99999999-99640	07/25/2025	072525	072525			CASH DUE TO FUND 640			770.79	
APP 64000000-10101	07/25/2025	072525	072525			POOLED CASH				770.79
APP 99999999-99720	07/25/2025	072525	072525			CASH DUE TO FUND 720			43,482.27	
APP 72000000-10101	07/25/2025	072525	072525			POOLED CASH				43,482.27
APP 99999999-99730	07/25/2025	072525	072525			CASH DUE TO FUND 730			7,247.07	
APP 73000000-10101	07/25/2025	072525	072525			POOLED CASH				7,247.07
APP 99999999-99805	07/25/2025	072525	072525			CASH DUE TO FUND 805			12,225.53	
APP 80500000-10101	07/25/2025	072525	072525			POOLED CASH				12,225.53
APP 99999999-99200	07/25/2025	072525	072525			CASH DUE TO FUND 200			41,200.20	
APP 20000000-10101	07/25/2025	072525	072525			POOLED CASH				41,200.20
APP 99999999-99205	07/25/2025	072525	072525			CASH DUE TO FUND 205			11,781.95	
APP 20500000-10101	07/25/2025	072525	072525			POOLED CASH				11,781.95
APP 99999999-99806	07/25/2025	072525	072525			CASH DUE TO FUND 806			5,610.92	
APP 80600000-10101	07/25/2025	072525	072525			POOLED CASH				5,610.92
APP 99999999-99801	07/25/2025	072525	072525			CASH DUE TO FUND 801			137.48	
APP 80100000-10101	07/25/2025	072525	072525			POOLED CASH				137.48
APP 99999999-99511	07/25/2025	072525	072525			CASH DUE TO FUND 511			535,777.09	
APP 51100000-10101	07/25/2025	072525	072525			POOLED CASH				535,777.09
APP 99999999-99844	07/25/2025	072525	072525			CASH DUE TO FUND 844			4,000.00	
APP 84400000-10101	07/25/2025	072525	072525			POOLED CASH				4,000.00

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

YEAR PER JNL SRC ACCOUNT EFF DATE JNL DESC	REF 1	REF 2	REF 3	ACCOUNT DESC LINE DESC	T	OB	DEBIT	CREDIT
APP 99999999-99915 07/25/2025 072525	072525			CASH DUE TO FUND 915			9,767.40	
APP 91500000-10101 07/25/2025 072525	072525			POOLED CASH				9,767.40
APP 99999999-99902 07/25/2025 072525	072525			CASH DUE TO FUND 902			64,468.10	
APP 90200000-10101 07/25/2025 072525	072525			POOLED CASH				64,468.10
APP 99999999-99311 07/25/2025 072525	072525			CASH DUE TO FUND 311			918.41	
APP 31100000-10101 07/25/2025 072525	072525			POOLED CASH				918.41
APP 99999999-99950 07/25/2025 072525	072525			CASH DUE TO FUND 950			1,308.28	
APP 95000000-10101 07/25/2025 072525	072525			POOLED CASH				1,308.28
				SYSTEM GENERATED ENTRIES TOTAL			2,174,757.29	2,174,757.29
				JOURNAL 2026/01/183 TOTAL			4,349,514.58	4,349,514.58

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND / ACCOUNT	YEAR	PER	JNL	EFF DATE	ACCOUNT DESCRIPTION		DEBIT	CREDIT
100 GENERAL FUND	2026	1	183	07/25/2025				
10000000-10101					POOLED CASH			109,903.36
10000000-20100					ACCOUNTS PAYABLE		109,903.36	
						FUND TOTAL	109,903.36	109,903.36
105 GF-(SUBFUND) FIRE AUTHORITY	2026	1	183	07/25/2025				
10500000-10101					POOLED CASH			32,367.38
10500000-20100					ACCOUNTS PAYABLE		32,367.38	
						FUND TOTAL	32,367.38	32,367.38
106 USDA FOREST SERV CWDG	2026	1	183	07/25/2025				
10600000-10101					POOLED CASH			8,550.50
10600000-20100					ACCOUNTS PAYABLE		8,550.50	
						FUND TOTAL	8,550.50	8,550.50
200 CITY ADMINISTRATIVE SERVICES	2026	1	183	07/25/2025				
20000000-10101					POOLED CASH			41,200.20
20000000-20100					ACCOUNTS PAYABLE		41,200.20	
						FUND TOTAL	41,200.20	41,200.20
201 WORKER'S COMP FUND	2026	1	183	07/25/2025				
20100000-10101					POOLED CASH			13,737.73
20100000-20100					ACCOUNTS PAYABLE		13,737.73	
						FUND TOTAL	13,737.73	13,737.73
202 LIABILITY FUND	2026	1	183	07/25/2025				
20200000-10101					POOLED CASH			23,589.75
20200000-20100					ACCOUNTS PAYABLE		23,589.75	
						FUND TOTAL	23,589.75	23,589.75
203 GARAGE FUND	2026	1	183	07/25/2025				
20300000-10101					POOLED CASH			2,081.56
20300000-20100					ACCOUNTS PAYABLE		2,081.56	
						FUND TOTAL	2,081.56	2,081.56
205 BILLING AND COLLECTION FUND	2026	1	183	07/25/2025				
20500000-10101					POOLED CASH			11,781.95
20500000-20100					ACCOUNTS PAYABLE		11,781.95	
						FUND TOTAL	11,781.95	11,781.95
206 PUBLIC SAFETY DISPATCH FUND	2026	1	183	07/25/2025				

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND / ACCOUNT	YEAR	PER	JNL	EFF DATE	ACCOUNT DESCRIPTION		DEBIT	CREDIT
20600000-10101					POOLED CASH			317.52
20600000-20100					ACCOUNTS PAYABLE		317.52	
						FUND TOTAL	317.52	317.52
208 BUILDING & GROUNDS MAINTENANCE	2026	1	183	07/25/2025				
20800000-10101					POOLED CASH			41,318.93
20800000-20100					ACCOUNTS PAYABLE		41,318.93	
						FUND TOTAL	41,318.93	41,318.93
209 IT FUND	2026	1	183	07/25/2025				
20900000-10101					POOLED CASH			8,163.84
20900000-20100					ACCOUNTS PAYABLE		8,163.84	
						FUND TOTAL	8,163.84	8,163.84
311 ARRC GENERAL OPERATING FUND	2026	1	183	07/25/2025				
31100000-10101					POOLED CASH			918.41
31100000-20100					ACCOUNTS PAYABLE		918.41	
						FUND TOTAL	918.41	918.41
511 RAIL TRAIL FUND	2026	1	183	07/25/2025				
51100000-10101					POOLED CASH			535,777.09
51100000-20100					ACCOUNTS PAYABLE		535,777.09	
						FUND TOTAL	535,777.09	535,777.09
640 PARKING DISTRICT	2026	1	183	07/25/2025				
64000000-10101					POOLED CASH			770.79
64000000-20100					ACCOUNTS PAYABLE		770.79	
						FUND TOTAL	770.79	770.79
700 SANITARY DISPOSAL SITE FUND	2026	1	183	07/25/2025				
70000000-10101					POOLED CASH			5,806.61
70000000-20100					ACCOUNTS PAYABLE		5,806.61	
						FUND TOTAL	5,806.61	5,806.61
710 AMBULANCE SERVICES FUND	2026	1	183	07/25/2025				
71000000-10101					POOLED CASH			37,068.36
71000000-20100					ACCOUNTS PAYABLE		37,068.36	
						FUND TOTAL	37,068.36	37,068.36
720 GOLF FUND	2026	1	183	07/25/2025				
72000000-10101					POOLED CASH			43,482.27

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND / ACCOUNT	YEAR	PER	JNL	EFF DATE	ACCOUNT DESCRIPTION		DEBIT	CREDIT
72000000-20100					ACCOUNTS PAYABLE		43,482.27	
						FUND TOTAL	43,482.27	43,482.27
730 CONFERENCE CENTER FUND	2026	1	183	07/25/2025				
73000000-10101					POOLED CASH			7,247.07
73000000-20100					ACCOUNTS PAYABLE		7,247.07	
						FUND TOTAL	7,247.07	7,247.07
777 AIRPORT FUND	2026	1	183	07/25/2025				
77700000-10101					POOLED CASH			5,677.57
77700000-20100					ACCOUNTS PAYABLE		5,677.57	
						FUND TOTAL	5,677.57	5,677.57
800 ELECTRIC FUND	2026	1	183	07/25/2025				
80000000-10101					POOLED CASH			71,079.57
80000000-20100					ACCOUNTS PAYABLE		71,079.57	
						FUND TOTAL	71,079.57	71,079.57
801 ELECTRIC CAPITAL RESERVE FUND	2026	1	183	07/25/2025				
80100000-10101					POOLED CASH			137.48
80100000-20100					ACCOUNTS PAYABLE		137.48	
						FUND TOTAL	137.48	137.48
805 STREET LIGHTING FUND	2026	1	183	07/25/2025				
80500000-10101					POOLED CASH			12,225.53
80500000-20100					ACCOUNTS PAYABLE		12,225.53	
						FUND TOTAL	12,225.53	12,225.53
806 PUBLIC BENEFITS CHARGES FUND	2026	1	183	07/25/2025				
80600000-10101					POOLED CASH			5,610.92
80600000-20100					ACCOUNTS PAYABLE		5,610.92	
						FUND TOTAL	5,610.92	5,610.92
820 WATER FUND	2026	1	183	07/25/2025				
82000000-10101					POOLED CASH			113,946.20
82000000-20100					ACCOUNTS PAYABLE		113,946.20	
						FUND TOTAL	113,946.20	113,946.20
830 RECYCLED WATER FUND	2026	1	183	07/25/2025				
83000000-10101					POOLED CASH			750,585.39
83000000-20100					ACCOUNTS PAYABLE		750,585.39	

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND / ACCOUNT	YEAR	PER	JNL	EFF DATE	ACCOUNT DESCRIPTION		DEBIT	CREDIT
						FUND TOTAL	750,585.39	750,585.39
840 CITY SEWER OPERATIONS FUN	2026	1	183	07/25/2025				
84000000-10101					POOLED CASH			119,464.12
84000000-20100					ACCOUNTS PAYABLE		119,464.12	
						FUND TOTAL	119,464.12	119,464.12
844 CITY SEWER CAPITAL PROJECTS FU	2026	1	183	07/25/2025				
84400000-10101					POOLED CASH			4,000.00
84400000-20100					ACCOUNTS PAYABLE		4,000.00	
						FUND TOTAL	4,000.00	4,000.00
900 SPECIAL DEPOSIT TRUST FUND	2026	1	183	07/25/2025				
90000000-10101					POOLED CASH			12,195.70
90000000-20100					ACCOUNTS PAYABLE		12,195.70	
						FUND TOTAL	12,195.70	12,195.70
902 GARBAGE BILLING & COLL. FUND	2026	1	183	07/25/2025				
90200000-10101					POOLED CASH			64,468.10
90200000-20100					ACCOUNTS PAYABLE		64,468.10	
						FUND TOTAL	64,468.10	64,468.10
915 UKIAH VALLEY FIRE DEPT	2026	1	183	07/25/2025				
91500000-10101					POOLED CASH			9,767.40
91500000-20100					ACCOUNTS PAYABLE		9,767.40	
						FUND TOTAL	9,767.40	9,767.40
922 MILLVIEW COUNTY WATER DISTRICT	2026	1	183	07/25/2025				
92200000-10101					POOLED CASH			6,853.45
92200000-20100					ACCOUNTS PAYABLE		6,853.45	
						FUND TOTAL	6,853.45	6,853.45
927 REDWOOD VALLEY WATER DISTR	2026	1	183	07/25/2025				
92700000-10101					POOLED CASH			73,335.86
92700000-20100					ACCOUNTS PAYABLE		73,335.86	
						FUND TOTAL	73,335.86	73,335.86
932 WILLOW WATER DISTRICT OPERAT	2026	1	183	07/25/2025				
93200000-10101					POOLED CASH			18.40
93200000-20100					ACCOUNTS PAYABLE		18.40	

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND / ACCOUNT	YEAR	PER	JNL	EFF DATE	ACCOUNT DESCRIPTION		DEBIT	CREDIT
						FUND TOTAL	18.40	18.40
950 HOPLAND SEWER OPERATIONS	2026	1	183	07/25/2025				
95000000-10101					POOLED CASH			1,308.28
95000000-20100					ACCOUNTS PAYABLE		1,308.28	
						FUND TOTAL	1,308.28	1,308.28
999 POOLED CASH FUND	2026	1	183	07/25/2025				
99999999-10100					US BANK CHECKING			2,174,757.29
99999999-99100					CASH DUE TO FUND 100		109,903.36	
99999999-99105					CASH DUE TO FUND 105		32,367.38	
99999999-99106					CASH DUE TO FUND 106		8,550.50	
99999999-99200					CASH DUE TO FUND 200		41,200.20	
99999999-99201					CASH DUE TO FUND 201		13,737.73	
99999999-99202					CASH DUE TO FUND 202		23,589.75	
99999999-99203					CASH DUE TO FUND 203		2,081.56	
99999999-99205					CASH DUE TO FUND 205		11,781.95	
99999999-99206					CASH DUE TO FUND 206		317.52	
99999999-99208					CASH DUE TO FUND 208		41,318.93	
99999999-99209					CASH DUE TO FUND 209		8,163.84	
99999999-99311					CASH DUE TO FUND 311		918.41	
99999999-99511					CASH DUE TO FUND 511		535,777.09	
99999999-99640					CASH DUE TO FUND 640		770.79	
99999999-99700					CASH DUE TO FUND 700		5,806.61	
99999999-99710					CASH DUE TO FUND 710		37,068.36	
99999999-99720					CASH DUE TO FUND 720		43,482.27	
99999999-99730					CASH DUE TO FUND 730		7,247.07	
99999999-99777					CASH DUE TO FUND 777		5,677.57	
99999999-99800					CASH DUE TO FUND 800		71,079.57	
99999999-99801					CASH DUE TO FUND 801		137.48	
99999999-99805					CASH DUE TO FUND 805		12,225.53	
99999999-99806					CASH DUE TO FUND 806		5,610.92	
99999999-99820					CASH DUE TO FUND 820		113,946.20	
99999999-99830					CASH DUE TO FUND 830		750,585.39	
99999999-99840					CASH DUE TO FUND 840		119,464.12	
99999999-99844					CASH DUE TO FUND 844		4,000.00	
99999999-99900					CASH DUE TO FUND 900		12,195.70	
99999999-99902					CASH DUE TO FUND 902		64,468.10	
99999999-99915					CASH DUE TO FUND 915		9,767.40	
99999999-99922					CASH DUE TO FUND 922		6,853.45	
99999999-99927					CASH DUE TO FUND 927		73,335.86	
99999999-99932					CASH DUE TO FUND 932		18.40	
99999999-99950					CASH DUE TO FUND 950		1,308.28	
						FUND TOTAL	2,174,757.29	2,174,757.29

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND			DUE TO	DUE FR
100	GENERAL FUND			109,903.36
105	GF-(SUBFUND) FIRE AUTHORITY			32,367.38
106	USDA FOREST SERV CWDG			8,550.50
200	CITY ADMINISTRATIVE SERVICES			41,200.20
201	WORKER'S COMP FUND			13,737.73
202	LIABILITY FUND			23,589.75
203	GARAGE FUND			2,081.56
205	BILLING AND COLLECTION FUND			11,781.95
206	PUBLIC SAFETY DISPATCH FUND			317.52
208	BUILDING & GROUNDS MAINTENANCE			41,318.93
209	IT FUND			8,163.84
311	ARRC GENERAL OPERATING FUND			918.41
511	RAIL TRAIL FUND			535,777.09
640	PARKING DISTRICT			770.79
700	SANITARY DISPOSAL SITE FUND			5,806.61
710	AMBULANCE SERVICES FUND			37,068.36
720	GOLF FUND			43,482.27
730	CONFERENCE CENTER FUND			7,247.07
777	AIRPORT FUND			5,677.57
800	ELECTRIC FUND			71,079.57
801	ELECTRIC CAPITAL RESERVE FUND			137.48
805	STREET LIGHTING FUND			12,225.53
806	PUBLIC BENEFITS CHARGES FUND			5,610.92
820	WATER FUND			113,946.20
830	RECYCLED WATER FUND			750,585.39
840	CITY SEWER OPERATIONS FUN			119,464.12
844	CITY SEWER CAPITAL PROJECTS FU			4,000.00
900	SPECIAL DEPOSIT TRUST FUND			12,195.70
902	GARBAGE BILLING & COLL. FUND			64,468.10
915	UKIAH VALLEY FIRE DEPT			9,767.40
922	MILLVIEW COUNTY WATER DISTRICT			6,853.45
927	REDWOOD VALLEY WATER DISTR			73,335.86
932	WILLOW WATER DISTRICT OPERAT			18.40
950	HOPLAND SEWER OPERATIONS			1,308.28
999	POOLED CASH FUND		2,174,757.29	
		TOTAL	2,174,757.29	2,174,757.29

** END OF REPORT - Generated by MaryJo Reynolds **

City of Ukiah

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10100 US BANK CHECKING

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
141	07/16/2025	WIRE	2290	DEPARTMENT OF HEALTH	152206	3 2025	07/16/2025		071625	66,596.44
								CHECK	141 TOTAL:	66,596.44
						NUMBER OF CHECKS 1		*** CASH ACCOUNT TOTAL ***		66,596.44

	COUNT	AMOUNT
TOTAL WIRE TRANSFERS	1	66,596.44

*** GRAND TOTAL *** 66,596.44

Report generated: 08/25/2025 14:20
User: mreynolds
Program ID: apcshdsb

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED
CLERK: mreynolds

YEAR PER JNL / SRC ACCOUNT / EFF DATE	JNL DESC	REF 1	REF 2	REF 3	ACCOUNT DESC / LINE DESC	T	OB	DEBIT	CREDIT
2026 1 331									
APP 71000000-20100					ACCOUNTS PAYABLE			66,596.44	
07/16/2025	071625	071625			AP CASH DISBURSEMENTS JOURNAL				
APP 99999999-10100					US BANK CHECKING				66,596.44
07/16/2025	071625	071625			AP CASH DISBURSEMENTS JOURNAL				
					GENERAL LEDGER TOTAL			66,596.44	66,596.44
APP 99999999-99710					CASH DUE TO FUND 710			66,596.44	
07/16/2025	071625	071625							
APP 71000000-10101					POOLED CASH				66,596.44
07/16/2025	071625	071625							
					SYSTEM GENERATED ENTRIES TOTAL			66,596.44	66,596.44
					JOURNAL 2026/01/331 TOTAL			133,192.88	133,192.88

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND / ACCOUNT	YEAR	PER	JNL	EFF DATE / ACCOUNT DESCRIPTION		DEBIT	CREDIT
710 AMBULANCE SERVICES FUND	2026	1	331	07/16/2025			
71000000-10101				POOLED CASH			66,596.44
71000000-20100				ACCOUNTS PAYABLE		66,596.44	
					FUND TOTAL	66,596.44	66,596.44
999 POOLED CASH FUND	2026	1	331	07/16/2025			
99999999-10100				US BANK CHECKING			66,596.44
99999999-99710				CASH DUE TO FUND 710		66,596.44	
					FUND TOTAL	66,596.44	66,596.44

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND			DUE TO	DUE FR
710	AMBULANCE SERVICES FUND			66,596.44
999	POOLED CASH FUND		66,596.44	
		TOTAL	66,596.44	66,596.44

** END OF REPORT - Generated by MaryJo Reynolds **

City of Ukiah

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10211 UMPQUA BANK

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
142	07/30/2025	WIRE	1664	U.S. BANK	152210	18-119-825	07/16/2025		073025	166,428.21
								CHECK	142 TOTAL:	166,428.21
						NUMBER OF CHECKS 1		*** CASH ACCOUNT TOTAL ***		166,428.21
							COUNT	AMOUNT		
						TOTAL WIRE TRANSFERS	1	166,428.21		
								*** GRAND TOTAL ***		166,428.21

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

CLERK: mreynolds

YEAR PER JNL / SRC ACCOUNT / EFF DATE	JNL DESC	REF 1	REF 2	REF 3	ACCOUNT DESC / LINE DESC	T	OB	DEBIT	CREDIT
2026 1 333									
APP 10000000-20100					ACCOUNTS PAYABLE			109,842.62	
07/30/2025	073025	073025			AP CASH DISBURSEMENTS JOURNAL				
APP 99999999-10211					UMPQUA BANK				166,428.21
07/30/2025	073025	073025			AP CASH DISBURSEMENTS JOURNAL				
APP 12000000-20100					ACCOUNTS PAYABLE			56,585.59	
07/30/2025	073025	073025			AP CASH DISBURSEMENTS JOURNAL				
					GENERAL LEDGER TOTAL			166,428.21	166,428.21
APP 99999999-99100					CASH DUE TO FUND 100			109,842.62	
07/30/2025	073025	073025							
APP 10000000-10101					POOLED CASH				109,842.62
07/30/2025	073025	073025							
APP 99999999-99120					CASH DUE TO FUND 120			56,585.59	
07/30/2025	073025	073025							
APP 12000000-10101					POOLED CASH				56,585.59
07/30/2025	073025	073025							
					SYSTEM GENERATED ENTRIES TOTAL			166,428.21	166,428.21
					JOURNAL 2026/01/333 TOTAL			332,856.42	332,856.42

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND / ACCOUNT	YEAR	PER	JNL	EFF DATE	ACCOUNT DESCRIPTION		DEBIT	CREDIT
100 GENERAL FUND	2026	1	333	07/30/2025				
10000000-10101					POOLED CASH			109,842.62
10000000-20100					ACCOUNTS PAYABLE		109,842.62	
						FUND TOTAL	109,842.62	109,842.62
120 STREETS CAPITAL IMPROVEMENTS	2026	1	333	07/30/2025				
12000000-10101					POOLED CASH			56,585.59
12000000-20100					ACCOUNTS PAYABLE		56,585.59	
						FUND TOTAL	56,585.59	56,585.59
999 POOLED CASH FUND	2026	1	333	07/30/2025				
99999999-10211					UMPQUA BANK			166,428.21
99999999-99100					CASH DUE TO FUND 100		109,842.62	
99999999-99120					CASH DUE TO FUND 120		56,585.59	
						FUND TOTAL	166,428.21	166,428.21

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND			DUE TO	DUE FR
100	GENERAL FUND			109,842.62
120	STREETS CAPITAL IMPROVEMENTS			56,585.59
999	POOLED CASH FUND		166,428.21	
		TOTAL	166,428.21	166,428.21

** END OF REPORT - Generated by MaryJo Reynolds **

City of Ukiah

A/P CASH DISBURSEMENTS JOURNAL

CASH ACCOUNT: 99999999 10211 UMPQUA BANK

CHECK NO	CHK DATE	TYPE	VENDOR	NAME	VOUCHER	INVOICE	INV DATE	PO	BATCH ID	NET
143	07/31/2025	WIRE	17010	FEDERAL ENERGY REGUL	152207	H25408-00	07/16/2025		073125	6,500.38
								CHECK	143 TOTAL:	6,500.38
144	07/31/2025	WIRE	280	SWRCB	152211	CW-8076-110	07/16/2025		073125	706,667.66
								CHECK	144 TOTAL:	706,667.66
						NUMBER OF CHECKS 2		*** CASH ACCOUNT TOTAL ***		713,168.04

	COUNT	AMOUNT
TOTAL WIRE TRANSFERS	2	713,168.04

*** GRAND TOTAL *** 713,168.04

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED
CLERK: mreynolds

YEAR PER JNL / SRC ACCOUNT / EFF DATE	JNL DESC	REF 1	REF 2	REF 3	ACCOUNT DESC / LINE DESC	T	OB	DEBIT	CREDIT
2026 1 336									
APP 80000000-20100					ACCOUNTS PAYABLE			6,500.38	
07/31/2025 073125		073125			AP CASH DISBURSEMENTS JOURNAL				
APP 99999999-10211					UMPQUA BANK				713,168.04
07/31/2025 073125		073125			AP CASH DISBURSEMENTS JOURNAL				
APP 82000000-20100					ACCOUNTS PAYABLE			706,667.66	
07/31/2025 073125		073125			AP CASH DISBURSEMENTS JOURNAL				
					GENERAL LEDGER TOTAL			713,168.04	713,168.04
APP 99999999-99800					CASH DUE TO FUND 800			6,500.38	
07/31/2025 073125		073125							
APP 80000000-10101					POOLED CASH				6,500.38
07/31/2025 073125		073125							
APP 99999999-99820					CASH DUE TO FUND 820			706,667.66	
07/31/2025 073125		073125							
APP 82000000-10101					POOLED CASH				706,667.66
07/31/2025 073125		073125							
					SYSTEM GENERATED ENTRIES TOTAL			713,168.04	713,168.04
					JOURNAL 2026/01/336 TOTAL			1,426,336.08	1,426,336.08

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND / ACCOUNT	YEAR	PER	JNL	EFF DATE	ACCOUNT DESCRIPTION		DEBIT	CREDIT
800 ELECTRIC FUND	2026	1	336	07/31/2025				
80000000-10101					POOLED CASH			6,500.38
80000000-20100					ACCOUNTS PAYABLE		6,500.38	
						FUND TOTAL	6,500.38	6,500.38
820 WATER FUND	2026	1	336	07/31/2025				
82000000-10101					POOLED CASH			706,667.66
82000000-20100					ACCOUNTS PAYABLE		706,667.66	
						FUND TOTAL	706,667.66	706,667.66
999 POOLED CASH FUND	2026	1	336	07/31/2025				
99999999-10211					UMPQUA BANK			713,168.04
99999999-99800					CASH DUE TO FUND 800		6,500.38	
99999999-99820					CASH DUE TO FUND 820		706,667.66	
						FUND TOTAL	713,168.04	713,168.04

A/P CASH DISBURSEMENTS JOURNAL

JOURNAL ENTRIES TO BE CREATED

FUND			DUE TO	DUE FR
800	ELECTRIC FUND			6,500.38
820	WATER FUND			706,667.66
999	POOLED CASH FUND		713,168.04	
		TOTAL	713,168.04	713,168.04

** END OF REPORT - Generated by MaryJo Reynolds **

Agenda Item No: 8.b.

MEETING DATE/TIME: 9/3/2025

ITEM NO: 2025-946

City of Ukiah

AGENDA SUMMARY REPORT

SUBJECT: Adoption of an Ordinance to Establish an Administrative Use Permit Process, Reorganize Performance Standards, and Clarify Related Zoning and Animal Keeping Provisions in the Ukiah City Code.

DEPARTMENT: Community Development

PREPARED BY: Katherine Schaefers, Planning Manager

PRESENTER: Consent Calendar

ATTACHMENTS:

1. Draft AUP Ordinance
2. Planning Commission Resolution

Summary: Council will consider adoption of an ordinance amending the Ukiah City Code to establish an Administrative Use Permit process, reorganize and consolidate performance standards, and clarify related zoning and animal keeping provisions in the Ukiah City Code.

Background: On December 7, 2022, the City Council adopted the 2040 Ukiah General Plan, which included an Agriculture Element focused on supporting and protecting agricultural lands. This element was developed to align City policies with Mendocino County's approach to preserving working lands, with the goal of reducing regulatory overlap and improving consistency across the Ukiah Valley. Since adoption of the General Plan, Staff has made steady progress completing programs and policies within the Agriculture Element. Of the twelve (12) Implementation Programs due to be completed by December 2030, ten (10) Programs have either been implemented through the Council's adoption of an ordinance or are in the process of being developed and/or are on track to be developed by the end of this Fiscal Year (June 2026). These include the following:

1. Implementation Program A - Agricultural Buffer (in progress)
2. Implementation Program B - Right to Farm (completed)
3. Implementation Program C - Align Agricultural Standards (completed/in progress)
4. Implementation Program E - Reduce Regulation - Local Agriculture (in progress)
5. Implementation Program F - Foodscaping (completed)
6. Implementation Program H - Urban Agricultural Definitions (in progress)
7. Implementation Program I - Support Community Gardens (in progress)
8. Implementation Program J - Urban Agricultural Incentive Zone (in progress)
9. Implementation Program K - Local Food: Food Trucks & Farm Stands (in progress)
10. Implementation Program M - Local Purchasing (in progress)

The purpose of this agenda item is to adopt an Ordinance (Attachment 1) to establish an Administrative Use Permit (AUP) process within the zoning code, which would complete Implementation Programs C, E, and I. Although many of the performance standards identified within the AUP ordinance are related to streamlining local agricultural uses, the AUP may prove an effective "zoning vehicle" for the streamlining of other minor uses in the City's zoning code. The AUP concept was first mentioned by Director Schlatter during the 2024 Community Development Department Fee Schedule Update as an option to explore for reducing regulation and increasing certainty within the development process Citywide.

Additionally, in recent years, and continuing into 2025, the City has seen growing public interest in small-scale, neighborhood-serving agricultural uses such as backyard chickens, beekeeping, and community gardens. These uses are generally compatible with residential areas but have often required a Minor Use Permit when a proposal involves even small deviations from adopted standards. That process, which includes public noticing, interdepartmental review, and Planning Commission approval, was developed for more complex land use proposals and has proven to be a barrier for lower-intensity activities.

The proposed ordinance addresses this issue by introducing a staff-level review process for small-scale agricultural uses and community gardens that request minor deviations from existing performance standards. The AUP is intended to reduce administrative burdens while still maintaining oversight and alignment with General Plan goals.

Zoning Reform Ad Hoc and Development of Draft AUP Ordinance

To assist Staff in developing this policy, Mayor Crane and Councilmember Orozco were appointed to a newly created Zoning Reform Ad Hoc by the Council on December 6, 2023. Formed to explore the creation of a new ministerial zoning permit and identify additional zoning streaming and reform efforts to provide better and more consistent development outcomes, the Zoning Reform Ad Hoc met with and provided input to Staff, including review of past draft versions of the Ordinance, approximately once every 2-3 months starting in 2024. After presenting a draft outline of the Ordinance to the Mendocino County Airport Land Use Commission for a consistency review and input in December 2024, Staff finalized language within the Ordinance for presentation to the Planning Commission.

Planning Commission Recommendation

At its regular meeting on July 9, 2025, the Planning Commission reviewed the proposed ordinance and unanimously recommended adoption by the City Council through Resolution No. 2025-05 (Attachment 2). During discussion, and based on Staff's recommendation, the Commission amended the ordinance to explicitly allow beekeeping and apiaries in all zones, with any deviation from standards subject to the new AUP process. The Commission also recommended clarifying the purpose and expiration provisions for Administrative Use Permits. Since the Commission's review, Staff has incorporated these revisions into the proposed Ordinance. An additional clarification has been made to UCC §9266 to address inconsistencies in the appeal process for decisions made by the Zoning Administrator. The updated language confirms that the City Council serves as both the hearing body and the final authority on such appeals.

City Council - Introduction

At its Regular Meeting on August 20, 2025, the Ukiah City Council unanimously voted (5–0) to introduce the ordinance for adoption. The Council adopted the ordinance as recommended by Staff and the Planning Commission, with one minor modification to §9381(C)(1) regarding beekeeping. This change, originally discussed and recommended by the Planning Commission at its July 9, 2025 meeting, had not yet been incorporated into the draft ordinance. The revised language clarifies that the keeping of up to four beehives is permitted in all zones, provided performance standards are met. Any deviation from those standards must be reviewed through the Administrative Use Permit process.

Discussion: The proposed Ordinance supports General Plan Implementation Program C by permitting "animal raising – personal" in all zones, consistent with the previously adopted definition. It also implements Implementation Program E, which directs the City to reduce regulatory barriers to low-intensity agriculture on residential parcels, including gardens, chickens, and beehives. In addition, the ordinance fulfills the intent of Implementation Program I, which seeks to support community gardens by simplifying the permitting process and providing more flexibility for site-specific conditions. Details related to the Ordinance are provided below.

AUP Ordinance Specifics

The proposed ordinance would establish a new Administrative Use Permit (AUP) process, reorganize and relocate existing performance standards into a new article of the Ukiah City Code, and clarify language in several related sections. Consistent with the purpose of the Zoning Reform Ad Hoc, the AUP creates a streamlined, ministerial permit pathway for low-impact uses that may require minor exceptions to performance standards, while maintaining neighborhood compatibility and public oversight. The ordinance also

distinguishes between commercial livestock keeping and personal animal keeping and updates the zoning code to reflect appropriate permitting standards across zoning districts.

Existing performance standards currently found in Ukiah City Code (UCC) Division 9, Chapter 2, Article 15.6 (established by Ordinance No. 1167 in 2016) and Section 9182 of Article 16 ("Animals within the City"), would be relocated to a new Article 23 of Division 9, Chapter 2, titled “Performance Standards for Administrative Use Permits.” This consolidation updates the standards that apply to a range of small-scale or neighborhood-serving uses.

The following uses are included as new sections within Article 23, along with the zoning districts in which each is allowed subject to their respective performance standards:

- **Community Gardens** are allowed in all zoning districts.
- **Live Entertainment** is allowed in the C-1, C-2, and PF districts.
- **Outdoor Dining** is allowed in the C-N, C-1, and C-2 districts when incidental to a restaurant on the same parcel.
- **Sidewalk Cafés** are allowed in the C-N, C-1, and C-2 districts when associated with a restaurant.
- **Outdoor Sales and Displays** are allowed in the C-N, C-1, C-2, and M districts for up to 30 days within a 12-month period when performance standards are met, with sales exceeding that or proposed in residential zones requiring an Administrative Use Permit.
- **Small-scale Animal Keeping**, including the personal keeping of hens and rabbits, along with beekeeping and apiaries, are allowed by right if performance standards are met. Roosters, turkeys, ducks, geese, and swine are prohibited in all zones except AE and the Combining Agricultural (-A) districts, where they are subject to separate permitting under Articles 10 or 13.

This code reorganization allows applicants to find applicable standards in one location and simplifies the process for uses that meet established criteria. An Administrative Use Permit may still be required when a proposed project does not fully comply with the standards or when additional review is warranted based on site context. To ensure compatibility, the Community Development Director may approve, conditionally approve, or deny a permit.

In addition, the Ordinance clarifies Section 4200 of Division 5, Chapter 2, which regulates livestock. The amendment states that the provisions of this chapter apply to commercial keeping of livestock, including for sale, breeding, production, or other business purposes, and that it does not apply to noncommercial or personal animal keeping regulated under Section 9381 of this Code. This distinction clarifies the difference between commercial livestock operations and personal animal keeping within residential or urban zones.

Environmental Review
The proposed ordinance is exempt from the California Environmental Quality Act (CEQA) pursuant to Section 15061(b)(3) of the CEQA Guidelines, also known as the "common sense" exemption. This exemption applies when it can be determined with certainty that the activity will not have a significant effect on the environment. The ordinance does not authorize new land uses or physical development and does not increase the intensity of development. It introduces procedural changes to the City's permitting process by allowing certain low-impact uses, which are currently subject to discretionary review through a Minor Use Permit, Minor Variance, or Minor Site Development Permit, to instead be reviewed through a ministerial and a Staff-level discretionary process. The ordinance does not alter any applicable environmental standards or regulations. As the ordinance streamlines existing procedures without resulting in physical changes or environmental impacts, the ordinance qualifies for the common sense exemption under CEQA.

Recommendation
Staff recommends the Council adopt an ordinance amending the Ukiah City Code to establish an Administrative Use Permit process, reorganize and consolidate performance standards, and clarify related zoning and animal keeping provisions in the Ukiah City Code. If adopted, this ordinance will go into effect in 30 days.

Recommended Action: Adopt an ordinance amending the Ukiah City Code to establish an Administrative Use Permit process, reorganize and consolidate performance standards, and clarify related zoning and animal keeping provisions in the Ukiah City Code.

BUDGET AMENDMENT REQUIRED: N/A

CURRENT BUDGET AMOUNT: N/A

PROPOSED BUDGET AMOUNT: N/A

FINANCING SOURCE: N/A

REVENUE: No GRANT: No

PREVIOUS CONTRACT/PURCHASE ORDER NO.: N/A

COORDINATED WITH: Darcy Vaughn, Assistant City Attorney; Craig Schlatter, Community Development Director

STRATEGIC PLAN (SP): **SP 3A** - Review and revise land use planning documents to be reflective of the long-term vision for the community.

CLIMATE INITIATIVES (CI): **5a** – Update zoning ordinance.

GENERAL PLAN ELEMENTS (GP): GP-Agriculture Element Implementation Program C (Align Agricultural Standards); E (Reduce Regulation - Local Agriculture); I (Support Community Gardens). GP-Land Use Element Implementation Program E (Zoning Code Amendments).

Approved: Sage Sangiacomo, City Manager

ORDINANCE NO.

ORDINANCE OF THE CITY COUNCIL OF THE CITY OF UKIAH ADDING A NEW SECTION 9269 AND A NEW ARTICLE 23 TO DIVISION 9, CHAPTER 2 OF THE CITY CODE TO ESTABLISH PROCEDURES AND PERFORMANCE STANDARDS FOR THE ISSUANCE OF ADMINSITRATIVE USE PERMITS.

The City Council of the City of Ukiah hereby ordains as follows:

SECTION ONE. FINDINGS

1. It is a goal of the City to provide a streamlined process for administrative review and determination on requests for uses and activities that have little to no impact on adjacent sites and surroundings.

2. Administrative Use Permits (AUPs) provide a discretionary review process for uses requiring case-by-case evaluation beyond ministerial permits but not rising to the threshold of a public hearing. This process allows the City to impose conditions and ensure compatibility with surrounding land uses while streamlining review to avoid unnecessary delays or complexity.

3. The establishment of clear performance standards and permit procedures for select uses is necessary in maintaining consistency with the intent of zoning regulations and the Ukiah 2040 General Plan. These standards provide an objective framework for reviewing proposed deviations, allowing the City to impose conditions that ensure neighborhood compatibility, protect public health and safety, and mitigate potential impacts on adjacent properties.

4. Pursuant to the Ukiah 2040 General Plan, and specifically Agriculture Implementation Program E, it is the policy of the City to reduce regulation for local agriculture by revising the Zoning Code to allow low-intensity agricultural activities on residential parcels, including but not limited to backyard beehives, chickens, and gardens. The revision includes objective use, development, and environmental standards, along with minimal permit fee requirements.

5. Pursuant to the Ukiah 2040 General Plan, and specifically Agriculture Implementation Program C, it is the policy of the City to adopt terminology and land use definitions consistent with those utilized by adjacent jurisdictions within the Ukiah Valley to support regional planning and potential future annexations.

6. Pursuant to the Ukiah 2040 General Plan, and specifically its Agriculture Implementation Program I, it is further the policy of the City to facilitate and streamline the permitting process for the establishment of community gardens within the City.

SECTION TWO.

Division 5, Chapter 2 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§ 4200 KEEPING LIVESTOCK INSIDE CITY LIMITS PROHIBITED WITHOUT PERMIT

A. It shall be unlawful for any person, firm, or corporation to keep, harbor or maintain, or cause, permit or suffer to be kept, harbored or maintained, within the corporate limits of the City any cow, bull, calf, horse, mule, jennie, jack, burro, sheep, goat, swine or any other livestock without then and there having a valid permit in writing issued by the Zoning Administrator of the City under the provisions of this chapter.

B. The provisions of this Chapter apply to the commercial keeping of livestock, including for sale, breeding, production, or other business purposes. This Chapter does not apply to noncommercial or personal animal keeping regulated under Section 9381 of this Code.

* * *

SECTION THREE.

Section 9016 of Division 9, Chapter 2, Article 3 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§ 9016 ALLOWED USES

The following uses are allowed in the Low Density Residential (R-1) District, pursuant to the development and operational standards of Article 20 if applicable:

* * *

Animal Raising - Personal

Beekeeping and Apiaries

* * *

Community Gardens

* * *

§ 9017 PERMITTED USES

The following uses may be permitted with the securing of an appropriate use permit pursuant to the provisions contained in Article 20 of this Chapter:

* * *

SECTION FOUR.

Section 9031 of Division 9, Chapter 2, Article 4 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§ 9031 ALLOWED USES

The following uses are allowed in Medium Density Residential (R-2) Districts, pursuant to the development and operational standards of Article 20 if applicable:

* * *

Animal Raising - Personal

Beekeeping and Apiaries

* * *

Community Gardens

* * *

§ 9032 PERMITTED USES

The following uses may be permitted in Medium Density Residential (R-2) Zoning Districts subject to first securing an appropriate use permit pursuant to the provisions contained in Article 20 of this Chapter:

* * *

SECTION FIVE.

Section 9046 of Division 9, Chapter 2, Article 5 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§ 9046 ALLOWED USES

The following uses are allowed in High Density Residential (R-3) Districts, pursuant to the development and operational standards of Article 20 if applicable:

* * *

Animal Raising - Personal

Beekeeping and Apiaries

* * *

Community Gardens

* * *

§ 9047 PERMITTED USES

The following uses may be permitted in High Density Residential (R-3) Districts subject to first securing an appropriate use permit pursuant to provisions contained in Article 20 of this Chapter:

* * *

Outdoor Sales and Display Projects

* * *

SECTION SIX.

Division 9, Chapter 2, Article 6 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§ 9061 USES ALLOWED

The following uses are allowed in Neighborhood Commercial Zoning Districts, pursuant to the development and operational standards of Article 20 if applicable:

* * *

Animal Raising - Personal

Beekeeping and Apiaries

Community Gardens

* * *

Outdoor Dining

Outdoor Sales and Display Projects

* * *

Sidewalk Cafe

* * *

Specialty food and beverage sales with tastings

* * *

§ 9062 USES PERMITTED WITH SECURING OF A USE PERMIT

The following uses may be permitted in Neighborhood Commercial (C-N) Districts, subject to first securing an appropriate use permit pursuant to provisions contained in Article 20 of this Chapter:

* * *

SECTION SEVEN.

Division 9, Chapter 2, Article 7 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§ 9081 ALLOWED USES

The following uses are allowed in the Community Commercial (C-1) Zoning District, pursuant to the development and operational standards of Article 20 if applicable:

* * *

Animal Raising - Personal

Beekeeping and Apiaries

* * *

Community Gardens

* * *

Live Entertainment

* * *

Outdoor Dining

Outdoor Sales and Display Projects

* * *

Sidewalk Cafe

* * *

Specialty food and beverage sales with tastings

* * *

§ 9082 PERMITTED USES

The following uses require approval of an appropriate use permit pursuant to the provisions contained in Article 20 of this Chapter:

* * *

* * *

SECTION EIGHT.

Division 9, Chapter 2, Article 8 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§ 9096 ALLOWED USES

The following uses are allowed in the Heavy Commercial (C-2) Zoning District, pursuant to the development and operational standards of Article 20 if applicable:

* * *

Animal Raising - Personal

Beekeeping and Apiaries

* * *

Community Gardens

* * *

Outdoor Dining

Outdoor Sales and Display Projects

* * *

Sidewalk Cafe

Specialty food and beverage sales with tastings

* * *

§ 9097 PERMITTED USES

The following uses require approval of an appropriate use permit pursuant to the provisions contained in Article 20 of this Chapter:

*** * ***

*** * ***

SECTION NINE.

Division 9, Chapter 2, Article 9 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§ 9111 USES ALLOWED

The following uses are allowed in Manufacturing (M) Districts, pursuant to the development and operational standards of Article 20 if applicable:

*** * ***

C. Animal Raising – Personal

D. Beekeeping and Apiaries

E. Community Gardens

F. Outdoor Sales and Display Projects

§ 9112 USES PERMITTED SUBJECT TO FIRST SECURING A USE PERMIT

The following uses may be permitted in Manufacturing (M) Districts subject to first securing an appropriate use permit, as provided in Article 20 of this Chapter, in each case:

*** * ***

SECTION TEN.

Section 9160 of Division 9, Chapter 2, Article 13 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§ 9160 AGRICULTURAL EXCLUSIVE OR A-E DISTRICT

*** * ***

B. The following specific regulations, in addition to the general regulations set forth in Chapter 2, Article 16 and Article 20 of this Division, shall apply in all A-E Districts.

C. Uses Allowed:

* * *

2. Agricultural Uses:

* * *

j. Beekeeping and Apiaries

3. Civic Uses:

a. Community Gardens

b. Day care facilities/small schools.

c. Safety services.

d. Utility service minor.

*** * ***

SECTION ELEVEN.

Division 9, Chapter 2, Article 15 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§ 9070.1 ALLOWED USES

The following uses are allowed in the Public Facilities (PF) Zoning District, pursuant to the development and operational standards of Article 20 if applicable:

*** * ***

Animal Raising - Personal

Beekeeping and Apiaries

*** * ***

Community Gardens

*** * ***

Live Entertainment

*** * ***

Specialty food and beverage sales with tastings

* * *

§ 9070.2 PERMITTED USES

The following uses are permitted in the Public Facilities (PF) Zoning District subject to first securing an appropriate use permit pursuant to the provisions contained in Article 20 of this Chapter:

*** * ***

SECTION TWELVE.

Section 9266 in Division 9, Chapter 2, Article 20 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§ 9266 APPEALS

* * *

An appeal of the decision of the Zoning Administrator shall go to the City Council for a final decision. Such an appeal must be made in writing stating the reasons for the appeal, must include the appeal fee, if any, established from time to time by City Council resolution, and must be filed with the City Clerk within ten (10) days of the date the decision was made. The City Council shall conduct a duly noticed public hearing on the appeal in accordance to the applicable procedures as set forth in this Article. At the close of the public hearing, the City Council may affirm, reverse, revise or modify the appealed decision of the Zoning Administrator. All City Council decisions on appeals of the Zoning Administrator's action are final for the City.

* * *

SECTION THIRTEEN.

A new Section 9269 is hereby added to Division 9, Chapter 2, Article 20 of the Ukiah City Code and shall read as follows:

§ 9269 ADMINISTRATIVE USE PERMITS

Administrative Use Permit application and processing procedures and standards shall be as follows:

A. Purpose. Administrative Use Permits allow specific uses to be established within designated zoning districts when deviations are requested from the criteria and performance standards set forth in Article 23 of this Chapter, entitled "Performance Standards," as well as from other applicable standards found elsewhere in this Article. These permits provide a discretionary review pathway for select uses seeking relief from established standards, while preserving consistency with the overarching intent of the zoning regulations and limiting the need for more extensive public hearing procedures. The standards in Article 23 serve as a framework for evaluating such requests, ensuring proposed deviations may be modified or conditioned to maintain compatibility with surrounding development and mitigate potential impacts on adjacent properties.

B. Applicability. The requirements, procedures, and standards set forth in this Section shall be applicable to the uses listed in Division 9, Chapter 2, Article 23 of this Code, subject to any exceptions or additional requirements and standards as set forth in that Article.

This Section shall not apply to facilities or uses governed by Division 2, Chapter 2, Article 10 (entitled "Broadband Deployment") of the Ukiah City Code, which are subject to separate review procedures and standards.

C. Approval Authority. The Community Development Director may approve, conditionally approve, or deny an Administrative Use Permit application, unless otherwise restricted by state law. Development must comply with all of the required standards in Article 23 of this Chapter and with all other requirements of this Section unless specifically exempted in Article 23 of this Chapter.

D. Application. Applications for Administrative Use Permits shall be initiated by submitting the following information to the Planning Division of the Community Development Department: a completed application form, signed by the property owner or authorized agent, accompanied by the required fee, and any other information, plans or maps prescribed by the Community Development Director. Application procedures and processing timeframes shall be in accordance with state law and procedural guidelines established by the Community Development Director.

E. Public notice and hearing. Public notice and/or hearing are not required for issuance of an Administrative Use Permit.

F. Conditions of approval. The Community Development Director may apply reasonable conditions of approval to bring the development into conformity with requisite performance standards.

G. Findings. The Community Development Director may issue an administrative use permit if the following findings can be made:

1. The proposed use is listed in this Chapter as a use permitted pursuant to an administrative use permit and subject to performance standards;

2. The proposed use as conditioned conforms to the performance standards for the proposed use as outlined in the Performance Standards set forth in Article 23 of this Chapter;

3. The site is physically suited for the type, density, and intensity of the proposed use, including access, utilities, and the absence of physical constraints, and can be conditioned to meet all related performance criteria and development standards.

4. Any other findings required under Article 23 of this Chapter for the specific use;

5. The use, together with the conditions applicable thereto, will not be detrimental to the public health, safety or welfare, or materially injurious to properties or improvements in the vicinity, or to the general welfare of the city;

H. Notice of decision. The Community Development Director shall prepare a written decision which shall contain the findings of fact upon which such decision is based and conditions of approval, if any. The decision shall be mailed and/or emailed to the applicant.

I. Appeals. Appeals of decisions on Administrative Use Permits shall be filed within five (10) working days of the issuance of the permit. Appeals shall be filed and processed in accordance with the procedure for appeal of a determination regarding a minor discretionary planning permit as set forth in Section 9266 of this Chapter.

J. Effective date of permit. An administrative use permit shall become effective at the end of the appeal period set forth in Section 9266 of this Chapter, unless appealed.

K. Approval to run with the land. Any administrative use permit approval shall run with the land and shall continue to be valid whether or not there is a change of ownership of the site or structure to which it applies.

L. Amendments—New application. Requests for changes in the conditions of approval of an administrative use permit, or a change to site plans or operation that would affect a condition of permit approval, shall be treated as an administrative use permit amendment. The procedures for filing and processing an application for an administrative use permit amendment shall be the same as those established for an initial or new administrative use permit application.

M. Revocation. An administrative use permit that is exercised in violation of a condition of approval or a provision of this title may be revoked, as provided in the revocation procedures set forth in Section 9262.H of this Chapter.

N. New applications following denial or revocation. If an application for an administrative use permit is denied or revoked, no new application for the same, or substantially the same, administrative use permit shall be filed within one year of the date of denial or revocation of the initial application, unless the denial is made without prejudice.

P. Expiration. The following provisions detail the expiration process of administration use permits.

1. Expiration Criteria: An approved administrative use permit shall expire under the following conditions:

a. If any project for which an Administrative Use Permit has been granted is not established within two (2) years of the permit's effective date; or

b. If the established land use for which the permit was granted has ceased or has remained inactive for twenty-four (24) consecutive months.

2. New Application: Nothing herein shall prohibit the holder of an expired administrative use permit under subsection P1a or P1b of this Section from applying for a new permit in accordance with the procedure for new applications under subsection D of this Section.

SECTION FOURTEEN.

Article 21 in Division 9, Chapter 2 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§ 9278 DEFINITIONS

*** * ***

KENNEL: Any lot, building, structure, or premises whereon or wherein five (5) or more dogs or five (5) or more cats, over the age of four (4) months are kept or maintained for commercial purpose, including but not limited to boarding, breeding, training, grooming, or sale. This definition shall not apply to the personal, non-commercial keeping of domestic pets by the occupant(s) of a dwelling unit. This definition also does not apply to a duly licensed veterinary hospital or public animal shelter.

*** * ***

SECTION FIFTEEN.

A new Article 23, entitled "Performance Standards for Administrative Use Permits and for Specific Allowed Uses" is hereby added to Division 9, Chapter 2 of the Ukiah City Code and shall read as follows:

§ 9380 PURPOSE AND INTENT

Performance standards provide the criteria for evaluating requests submitted through the Administrative Use Permit process (see Section 9269 of this Code), certain other use permits, and specific allowed uses that require minimal discretion and review. The performance standards listed in this Article are intended to explicitly describe the required location, configuration, design, amenities and operation of specified uses. The performance standards also mitigate potential adverse impacts on the neighborhood and maintain harmonious uses in the area. The performance standards are consistent with the goals and policies of the City's General Plan.

§ 9381 ANIMALS WITHIN THE CITY

A. Purpose and Applicability. The provisions of this Section establish performance standards for the noncommercial keeping of certain animals within the City of Ukiah. The intent is to protect the public health, safety, and welfare while supporting personal food production, educational programs (e.g., 4-H/FFA), and compatibility with residential neighborhoods.

All other animals commonly kept as pets or for personal enjoyment (e.g., fish, dogs, cats, potbellied pigs, reptiles, birds, hamsters) are exempt from these standards unless separately regulated by the Ukiah Municipal Code or determined by the Community Development Director to pose a nuisance or health risk.

This Section does not apply to commercial livestock operations, which are governed by Division 5, Chapter 2 of the Ukiah City Code.

Furthermore, roosters, turkeys, ducks, geese, and swine, are prohibited in all zoning districts within the City except for the Agricultural Exclusive (AE) and Combining Agricultural (-A) zoning districts, in which this use is subject to the permitting requirements set forth in Article 10 or Article 13 of this Chapter as appropriate.

B. Animal Raising – Personal. Animal Raising – Personal, as defined in Section 9278 of this Code and as may be amended, shall be allowed in any zoning district provided that all standards set forth in the definition in Section 9278 apply.

An application for an Administrative Use Permit allowing exceptions to the standards in Section 9278 may be authorized under Section 9269 of this Chapter. Issuance of an Administrative Use Permit in that

instance will require the following findings:

1. Compliance with Applicable Laws. The keeping of the animal(s) will not violate any provision of the Ukiah City Code or any other applicable provision of law.

2. Humane Treatment of Animals. The keeping of the animal as proposed will not result in an animal receiving inhumane treatment.

3. Odors. The keeping of the animal will not result in obnoxious odors at nearby properties adversely affecting the enjoyment of such property.

4. Flies. The keeping of the animal(s) will not cause or result in flies or other insects adversely affecting the enjoyment of nearby property.

5. Noise. The keeping of the animal(s) will not result in noises which adversely affect the enjoyment of nearby property.

6. Nuisances. The keeping of the animal(s) will not result in other public or private nuisances.

7. Public Health, Sanitation, Safety, Welfare. The keeping of the animal(s) will not result in an adverse effect on the health, sanitation, safety or welfare of an occupant of the premises or other nearby residents.

8. Procreation. The keeping of the animal(s) will not result in procreation which adversely affects nearby properties or the natural habitat.

C. Beekeeping and Apiaries.

1.The keeping of bees in four beehives or less shall be allowed, provided they comply with the following standards and requirements:

a. Colony density

i. The minimum lot size required for an apiary shall be 4,000 square feet.

ii. The maximum number of hives allowed in an apiary shall be determined based on lot sizes as follows:

1. 4,000 square feet to 10,000 square feet: 2 hives

2. 10,001 square feet to 43,560 square feet: 4 hives

3. On any lot of 10,001 square feet in size or larger, more than four beehives may be kept, provided there is an additional lot area of 2,500 square feet for each hive. If a skep, barrel, log gum, or other container are used instead of boxes for a hive, the dimensions of the hive shall not exceed the limits of this subsection.

b. Care and Maintenance

i. Hives should not be kept or maintained within any required front yard area. Hives located within the side and rear yard areas of a lot should maintain a minimum of a 10-foot setback from side and rear property lines to the hives.

ii. Hives and apiaries shall be kept in a manner that facilitates inspection and shall be maintained in a sound and usable condition.

iii. In all instances, there shall be one adequate and accessible water source provided on site and located within 20 feet of the beehive(s). The water source shall be maintained so as not to become stagnant.

iv. A flyway barrier at least six feet in height but no greater than seven feet in height shall be erected parallel to the lot line between the hive opening and any lot line located within 25 feet. The flyway barrier shall consist of a wall, solid fence, dense vegetation, or a combination thereof extending five feet beyond the hive in each direction. A flyway barrier of dense vegetation shall not be limited to seven feet in height provided that the initial planting is four feet in height and the vegetation normally reaches six feet in height or higher. Barriers shall be maintained in good condition so that all bees are forced to fly at an elevation of at least six feet above ground level.

2. All beekepers are required to register their bee colonies with the Mendocino County Agriculture Commissioner and adhere to all state laws related to the keeping of bees, including California Food and Agricultural Code, Division 13, Chapter 1, as may be amended from time to time. Beekepers must also notify the Agriculture Commissioner upon relocation of bee colonies.

3. An application for an Administrative Use Permit allowing exceptions to the above standards may be authorized under Section 9269 of this Chapter.

D. Nonconforming Animal Keeping, Declaration of Public Nuisance. The City Council declares to be a public nuisance any lot where animal keeping is operating in a manner that is not in conformance with this Section.

E. Other Applicable Laws. Nothing in this Section shall exempt any property from enforcement under applicable nuisance, animal control, or public health laws. The Community Development Director may require an administrative use permit if the number, condition, or management of noncommercial animal keeping poses a risk to health, safety, or welfare.

§ 9382 OUTDOOR SALES AND DISPLAY PROJECTS

Outdoor sales establishments are allowed in all Commercial (C-N, C-1, C-2), and Manufacturing Zoning Districts provided that they occur for no more than thirty (30) days within a twelve (12) month period, in accordance with the below standards. Outdoor sales establishments that exceed thirty (30) days within a twelve (12) month period, that are located in Residential (R-1, R-2, or R-3) Zoning Districts or that do not meet the following performance standards may be permitted through an Administrative Use Permit, as regulated by Section 9269 of this Chapter.

A. Parking: Parking shall be designated for a minimum of three (3) automobiles, located off the public right-of-way with no automobile maneuvering permitted in the public right-of-way.

B. Signage: A maximum of twenty-five percent (25%) of the largest side of the vehicle or structure used

in the sales operation. In addition, one sandwich board or A-frame sign pursuant to the standards set forth in Subsection 3227.A.5 of this Code.

C. Utilities: The need for sanitary sewer, water, and electrical services shall be determined through the Administrative Use Permit process, and all connections shall comply with this Code.

D. Business License: Business license must be prominently displayed at all times, and the operator shall have proof of Board of Equalization sales permit.

§ 9383 COMMUNITY GARDENS

Community gardens may be allowed in any zoning district and shall comply with the following standards and requirements:

A. Days and Hours of Operation: Seven (7) days a week from seven o'clock (7:00) A.M. until dusk.

B. Fencing: Fencing is discouraged. When fencing is required to prevent vandalism or theft, trespassing, and/or encroachment by animals, fencing shall comply with the following:

1. Open Fencing: Open fencing (such as chain link, wrought iron, deer) up to seven feet (7') in height, measured from the grade adjacent to the fence to the top of the fence, is allowed at the property line or set back from the property line. This type of fencing allows the garden to be protected and maximizes the size of the garden while creating an open, pedestrian-oriented use consistent with the purposes of this code.

2. Solid Fencing: Solid fencing (such as wood, masonry) is prohibited since this closes off the site to the public realm, presents a solid unbroken surface which is not pedestrian-oriented, and reduces the size of the garden.

C. Herbicides and Pesticides: All pest and weed control shall be accomplished through organic means using the least toxic methods available. If unsure how to combat pests, weeds, and diseases organically, contact the garden team leader or other qualified professionals or organizations for guidance and resources.

D. Motorized Equipment: Use of motorized equipment (such as weed eaters, leaf blowers, rototillers) shall be limited to weekdays from eight o'clock (8:00) A.M. to seven o'clock (7:00) P.M. and weekends and holidays recognized by the City of Ukiah from ten o'clock (10:00) A.M. to five o'clock (5:00) P.M.

E. Noise: Compliance with the City of Ukiah noise regulations and restrictions set forth in Division 7, Chapter 1, Article 6 of this Code is required, except as indicated in Subsection D of this Section, Motorized Equipment, which may be more restrictive.

F. Parking: A minimum of one parking space along the street frontage of the community garden shall be provided. Vehicle use by members of the community garden should be limited to taking supplies to and from the garden, rainy or poor weather, or assisting gardeners with disabilities. Users of the garden shall be encouraged to walk or bike to the site in order to reduce the need for parking and parking impacts on neighboring uses.

G. Signs: Signs are limited to identification, informational, and directional signs in conformance with the

sign regulations set forth in Division 3, Chapter 7 of this Code.

H. Structures – Accessory: The following accessory structures are allowed: tool sheds, greenhouses, cold-frames, hoop houses, compost bins, rain barrel systems, picnic tables, benches, bike racks, garden art, and fences subject to the development standards of the zoning district in which the community garden is located and the requirements of this Section. Commercially maintained portable bathrooms are allowed as accessory structures; provided, that they comply with accessibility standards and comply with the development standards of the zoning district in which the community garden is located.

I. Water Use: Every effort shall be made to reduce water usage. Drip irrigation is required where feasible. Mulch and compost shall be used in order to reduce the amount of water needed for garden plots.

J. Prohibitions: Smoking, drinking alcoholic beverages, using illegal drugs, and gambling are prohibited. Weapons, pets and other animals (except service animals) are also prohibited.

Community gardens that do not meet the above performance standards may be permitted through an Administrative Use Permit, as regulated by Section 9269 of this Chapter.

§ 9384 LIVE ENTERTAINMENT

A. Live entertainment uses may occur in the C-1, C-2, and P-F zoning districts provided they comply with the following standards and requirements:

1. Live entertainment shall commence no earlier than ten o'clock (10:00) A.M. and shall end at eleven o'clock (11:00) P.M. and is limited to two (2) times a week.

2. Live entertainment shall not violate the noise regulations and restrictions set forth in Division 7, Chapter 1, Article 6 of this Code.

3. The number of people within a building where live entertainment is performing shall not exceed the occupancy standards contained in the California Building Code or Ukiah City Code.

4. Businesses desiring to have live entertainment shall provide adequate security during and after live entertainment events.

5. Parking shall generally comply with the Ukiah City Code, although on-street parking within commercial zoning districts may be included in the number of parking spaces provided for the live entertainment.

6. Any building proposed for live entertainment shall comply with all Fire Code requirements and shall be reviewed and approved by the Ukiah Fire Marshal.

B. Management Plan Submittal: As a part of the application for the conducting of live entertainment, the applicant shall submit a management plan addressing the items listed below, which will be distributed by the Planning Division to the Ukiah Police Department and Ukiah Valley Fire Authority for review and comments. The management plan shall, at a minimum, include the following:

1. Potential for loitering and how the business will preclude loitering.

2. Adequacy of lighting for security and safety purposes.

3. Adequacy of parking.

4. Compatibility and suitability with the existing and allowed uses in the area and/or character of the area, including, but not limited to, proximity to sensitive land uses such as residences, schools, parks, daycare facilities, and churches.

5. Details regarding how security will be provided during and after live entertainment events.

6. Likelihood the use would facilitate the vitality, economic viability, and/or provide recreational or entertainment opportunities in an existing commercial area without presenting a significant impact on health and safety.

7. Hours of operation for the business and hours of proposed live entertainment.

8. Other information deemed necessary on a case-by-case basis.

C. Relief from any of the standards or requirements may be sought through the pursuit of an Administrative Use Permit, as regulated within Section 9269 of this Chapter. The determination shall be based, in part, on how much relief is being sought and the location of the proposed live entertainment and its potential to impact the area.

§ 9385 OUTDOOR DINING

On-site outdoor dining may be allowed in the C-N, C-1 and C-2 zoning districts, provided it is incidental to and part of the operation of a restaurant located on the same parcel, and it complies with the standards and requirements listed below:

A. Purpose: The provisions of this Section are intended to allow outdoor dining in association with a restaurant located on the same parcel as the outdoor dining, where the outdoor dining is clearly incidental to the adjacent restaurant use and will not negatively impact the operations and function of the existing restaurant, including parking facilities, pedestrian access and circulation, and disabled access facilities.

B. Location of Outside Dining: Outdoor dining shall be located on the same site as the restaurant which the outdoor dining will serve. Outdoor dining facilities, such as tables, chairs, umbrellas, etc., shall not be located in pedestrian walkways, required parking spaces, or disabled access facilities (such as parking spaces, walkways, entries, etc.). Outdoor dining areas may be located in landscaped areas if located in such a manner as to not damage the landscaping.

C. Hours of Operation: Days and hours of operation for the outdoor dining shall not extend beyond the hours of operation for the restaurant which it serves. Tables, chairs, and all other furniture used in the operation of outdoor dining shall be removed from any pedestrian walkways and stored indoors at night and whenever the cafe is not in operation.

D. Live Entertainment: Outdoor dining shall not be used for live entertainment unless in compliance with Section 9384 of this Code.

E. Tables, Chairs, Furniture, Signage:

1. In order to provide adequate and safe ingress/egress, a minimum unobstructed pedestrian walkway width of forty-eight inches (48") or the width of the doors, whichever is greater, shall be maintained. The required width of the unobstructed pedestrian walkway shall extend from the front of the door(s) to the public sidewalk. A reduced width may be approved by the Building Official in compliance with the building code.

2. A minimum of sixty inches (60") of unobstructed space shall be maintained between exits and any furniture or fixtures related to outdoor dining, or as required by the building code, whichever is greater.

3. All outdoor dining furniture, including tables, chairs, umbrellas, and planters, shall be movable.

4. Umbrellas shall be secured with a minimum base of not less than sixty (60) pounds and shall leave a vertical clearance of seven feet (7') from the sidewalk surface.

5. Outdoor heaters are allowed subject to fire and building code compliance. Non-live music and/or speakers may be used provided the music does not violate the noise regulations and restrictions set forth in Division 7, Chapter 1, Article 6 of this Code.

6. No signage shall be allowed in the outdoor dining area except for the name of the establishment on an awning or umbrella fringe and in compliance with this Section and the signage regulations set forth in Division 3, Chapter 7 of this Code.

F. Maintenance: The property and/or business owner are responsible for maintaining all outdoor dining furnishings and the outdoor dining area in good condition, including, but not limited to, the following:

1. All outdoor dining furnishings and all exterior surfaces within the outdoor dining area shall be easily cleanable and kept clean and free of debris.

2. The outdoor dining area and adjacent areas kept in a clean and safe condition.

G. Food and Beverages: Outdoor dining areas may only serve food and nonalcoholic beverages prepared or stocked for sale at the adjoining indoor restaurant; provided, however, that the service of beer or wine or both, solely for on-premises consumption by customers within the outdoor dining area, may be authorized by the Community Development Director and Police Department if each of the following requirements are met:

1. The outdoor dining operation is duly licensed, or prior to the service of any beer or wine, will be duly licensed by State authorities to sell beer or wine for consumption within the outdoor dining area.

2. The authorized outdoor dining area is identified in a manner which will clearly separate and delineate it from the areas of the sidewalk that will remain open to pedestrian traffic.

3. One or more signs, as approved as part of the encroachment permit, are posted during all times

the sidewalk cafe is in operation, which shall give notice to the cafe's customers that the drinking of beer or wine or the carrying of any open container which contains beer or wine is prohibited and unlawful outside the delineated outdoor dining area.

Outdoor dining areas authorized by the Community Development Department and Police Department and in compliance with the requirements of this section are exempt from section 6000 of this Code.

H. Service Requirements:

1. Service areas (such as busing and service stations) may be located within the outdoor dining area. Service areas shall comply with subsection B of this Section (Location of Outside Dining). Outdoor food preparation in the outdoor dining area is prohibited.

2. Restrooms for the outdoor dining area shall be provided in the adjoining indoor restaurant. Seating for the outdoor dining may be counted in determining the restroom requirements for the indoor restaurant at the discretion of the Building Official.

I. Revocation: The outdoor dining may be revoked by the City upon finding that one or more of the requirements of this section have been violated or that the outdoor dining is being operated in a manner that constitutes a nuisance.

J. Relief from any of the standards or requirements may be sought through the pursuit of an Administrative Use Permit, as regulated within Section 9269 of this Chapter.

§ 9386 SIDEWALK CAFE

A. A sidewalk cafe may be allowed in the C-N, C-1, and C-2 zoning districts, provided it is incidental to and part of the operation of a restaurant and it complies with the standards and requirements listed below.

B. Purpose: The provisions of this section are intended to allow a sidewalk cafe to operate in association with an allowed restaurant use, where the sidewalk cafe is clearly incidental to the restaurant use and will not negatively impact the right-of-way.

C. Permit Requirements: A sidewalk cafe shall require the approval of an encroachment permit from the Department of Public Works and Planning and Community Development Department.

D. Limitations and Requirements: A sidewalk cafe may be allowed only where allowed by section 9385 of this Code and only when the sidewalk cafe is incidental to and part of the operation of an adjacent restaurant and when in compliance with the following requirements of this section:

1. Where Permissible: A sidewalk cafe may be located on a public sidewalk immediately adjacent to and abutting the indoor restaurant which operates the cafe; provided, that the area in which the sidewalk cafe extends is no farther along the sidewalk frontage than the operating indoor restaurant.

2. Location of Sidewalk Cafes: Each cafe shall be confined to a defined location on the sidewalk immediately adjacent to the restaurant which operates the cafe.

3. Hours of Operation: Sidewalk cafes may operate on days whenever fair weather would enhance outdoor dining. The hours of operation shall not exceed eight o'clock (8:00) A.M. to nine o'clock (9:00) P.M. Tables, chairs, and all other furniture used in the operation of a sidewalk cafe shall be removed from the sidewalk and stored indoors at night and whenever the cafe is not in operation. Additional hours may be authorized contingent up on the approval of an Administrative Use Permit.

4. Sidewalk Clearances: A sidewalk cafe may be allowed only where the sidewalk is wide enough to adequately accommodate the usual pedestrian traffic in the area, to comply with California State accessibility standards and federal ADA requirements, and the operation of the proposed cafe.

5. Live Entertainment: A sidewalk cafe shall not be used for live entertainment. Live entertainment at sidewalk cafes may be authorized in compliance with Section 9384 of this Code.

E. Tables, Chairs, Furniture, Signage:

1. All tables and chairs comprising a sidewalk cafe shall be situated in a safe fashion and away from any sidewalk or street barrier including a bollard, and shall not be within eight feet (8') of any designated bus stop.

2. The dining area shall not impede the use of public furnishings such as lighting, benches, etc.

3. In order to provide adequate and safe ingress/egress, a minimum unobstructed public sidewalk width of forty-eight inches (48") shall be maintained for the entire length of the sidewalk cafe. The required width shall extend from the front of the door(s) to the end of the sidewalk cafe.

4. A minimum of sixty inches (60") of unobstructed space shall be maintained between exits and any furniture or fixtures related to the sidewalk cafe, or as required by the building code, whichever is greater.

5. All sidewalk cafe furniture, including tables, chairs, umbrellas, and planters, shall be movable.

6. Umbrellas shall be secured with a minimum base of not less than sixty (60) pounds and shall leave a vertical clearance of seven feet (7') from the sidewalk surface.

7. Outdoor heaters are allowed subject to fire and building code compliance. Music and/or speakers may be authorized contingent up on the approval of an Administrative Use Permit.

8. No signage shall be allowed at the sidewalk cafe except for the name of the establishment on an awning or umbrella fringe and in compliance with this section and the signage regulations set forth in Division 3, Chapter 7 of this Code.

9. All furnishings and other items associated with the sidewalk cafe shall be removed from the sidewalk during nonoperation hours of the cafe. Storage of these items outside may be authorized contingent up on the approval of an Administrative Use Permit.

10. Any proposed seating in the vicinity of street trees shall comply with the City's Management Guidelines adopted December 1, 2010.

F. Maintenance: The permittee is responsible for maintaining all outdoor dining furnishings and the sidewalk cafe area in good condition, including, but not limited to, the following:

1. All outdoor dining furnishings and all exterior surfaces within the sidewalk cafe area shall be easily cleanable and kept clean and free of debris.

2. The sidewalk cafe area and adjacent areas shall be kept in a clean and safe condition.

G. Food and Beverages: A sidewalk cafe may serve only food and nonalcoholic beverages prepared or stocked for sale at the adjoining indoor restaurant; provided, however, that the service of beer or wine or both solely for on-premises consumption by customers within the areas of the sidewalk cafe may be authorized by the Community Development Department and Police Department as part of the required encroachment permit if each of the following requirements are met:

1. The sidewalk cafe operation is duly licensed, or prior to the service of any beer or wine will be duly licensed by State authorities to sell beer or wine for consumption within the area of the sidewalk cafe.

2. The area in which the sidewalk cafe is authorized is identified in a manner, as part of the encroachment permit, which will clearly separate and delineate it from the areas of the sidewalk that will remain open to pedestrian traffic.

3. One or more signs, as approved as part of the encroachment permit, are posted during all times the sidewalk cafe is in operation, which shall give notice to the cafe's customers that the drinking of beer or wine or the carrying of any open container which contains beer or wine is prohibited and unlawful outside the delineated area of the sidewalk cafe. Sidewalk cafes authorized by the Community Development Department and Police Department as part of the required encroachment permit and in compliance with the requirements of this section are exempt from section 6000 of this code.

H. Service Requirements:

1. The outdoor preparation of food and busing and service stations are prohibited at the sidewalk cafe. Outdoor service station may be authorized contingent up on the approval of an Administrative Use Permit.

2. Restrooms for the sidewalk cafe shall be provided in the adjoining indoor restaurant. Seating for the sidewalk cafe may be counted in determining the restroom requirements for the indoor restaurant at the discretion of the Building Official.

3. Trash and refuse receptacles for the sidewalk cafe shall not be permitted within the area designated for the sidewalk cafe or on adjacent sidewalk areas and the permittee shall remove trash and litter as they accumulate. Trash and/or refuse containers may be authorized within the outdoor dining area or adjacent sidewalk areas contingent on the approval of an Administrative Use Permit.

I. Power to Prohibit Operation of the Sidewalk Cafe: Any encroachment permit issued for a sidewalk cafe shall provide that the City shall have the right and power, acting through the City Manager or designee, to prohibit the operation of a sidewalk cafe at any time because of anticipated or actual problems or conflicts in the use of the sidewalk area. Such problems may arise from, but are not limited to, scheduled festivals and similar events, or parades or marches, or repairs to the street or sidewalk, or from demonstrations or emergencies occurring in the area. To the extent possible, the permittee shall be given prior written notice of any time period during which the operation of the sidewalk cafe will be prohibited by the City, but any failure to give prior written notice shall not affect the right and power of the City to prohibit the cafe's operation at any particular time.

J. Conditions: In connection with granting the encroachment permit for a sidewalk cafe, conditions may be imposed in granting approval as deemed necessary for the proposed operation to meet the operating requirements of this section.

K. Modifications: In the event the City determines during the operation of an approved sidewalk cafe that additional or revised conditions are necessary in order for the sidewalk cafe to comply with the requirements of this section, the City shall have the ability to add additional conditions to the approved encroachment permit.

L. Revocation: The encroachment permit to operate a sidewalk cafe may be revoked by the City upon finding that one or more conditions of the permit or this section have been violated or that the sidewalk cafe is being operated in a manner that constitutes a nuisance, or that the operation of the sidewalk cafe unduly impedes the movement of pedestrians past the sidewalk cafe. Revocations may be appealed per the process outlined in Section 5613 of this Code.

M. Relief from any of the standards or requirements may be sought through the pursuit of an Administrative Use Permit, as regulated within Section 9269 of this Chapter.

§ 9387 SPECIALTY FOOD AND BEVERAGE SALES WITH TASTINGS

Specialty food and beverage sales with tastings may be allowed in the C-N, C-1, C-2, and P-F zoning districts provided they comply with the following standards and requirements:

A. Days and Hours of Operation: Days and hours of operation shall be limited to daily from ten o'clock (10:00) A.M. to ten o'clock (10:00) P.M. Additional hours may be authorized with approval of an administrative use permit.

B. Live Entertainment: Live entertainment is allowed in compliance with Section 9384 of this code and may perform until eight o'clock (8:00) P.M. Other arrangements for live entertainment may be authorized with approval of an administrative use permit.

C. Outdoor Seating: Outdoor seating is allowed in compliance with the applicable requirements for Outdoor Dining included in Section 9385 of this Code or Sidewalk Cafes in Section 9386 of this Code.

D. Administrative Use Permit: An application for an Administrative Use Permit to allow additional operating hours and/or live entertainment in a manner that exceeds the operating characteristics required in this Section may be authorized as set forth in Section 9269 of this Chapter, and shall incorporate

findings that address the following considerations:

1. Potential for loitering and how the business will preclude loitering.

2. Adequacy of lighting for security and safety purposes.

3. Adequacy of parking.

4. Compatibility and suitability with the existing and allowed uses in the area and/or character of the area, including but not limited to proximity to sensitive land uses such as residences, schools, parks, daycare facilities, and churches.

5. Likelihood the use would facilitate the vitality, economic viability, and/or provide recreational or entertainment opportunities in an existing commercial area without presenting a significant impact on health and safety.

6. Details regarding how security will be provided during and after live entertainment events.

7. Other information deemed necessary on a case-by-case basis.

SECTION SIXTEEN

The following sections of the Ukiah City Code shall be repealed:

1. Article 15.6 in Division 9, Chapter 2.

2. Section 9182

2. Section 9184

SECTION SEVENTEEN.

1. Publication: Within fifteen (15) days after its adoption, this Ordinance shall be published once in a newspaper of general circulation in the City of Ukiah. In lieu of publishing the full text of the Ordinance, the City may publish a summary of the Ordinance once 5 days prior to its adoption and again within fifteen (15) days after its adoption.

2. Effective Date: The ordinance shall become effective thirty (30) days after its adoption.

3. Severability: If any section, subsection, subdivision, paragraph, sentence, clause or phrase of this Ordinance, or its application to any person or circumstance, is for any reason held to be invalid or unenforceable, such invalidity or unenforceability shall not affect the validity or enforceability of the remaining sections, subsections, subdivisions, paragraphs, sentences, clauses or phrases of this Ordinance, or its application to any other person or circumstance. The City Council of the City of Ukiah hereby declares that it would have adopted each section, subsection, subdivision, paragraph, sentence, clause or phrase hereof, irrespective of the fact that any one or more other sections, subsections, subdivisions, paragraphs, sentences, clauses or phrases hereof be declared invalid or unenforceable.

Introduced by title only on , 2025, by the following roll call vote:

AYES:
NOES:
ABSENT:
ABSTAIN:

Adopted on , 2025, by the following roll call vote:

AYES:
NOES:
ABSENT:
ABSTAIN:

_____
Douglas F. Crane, Mayor

ATTEST:

_____
Kristine Lawler, CMC/City Clerk

PLANNING COMMISSION RESOLUTION NO. 2025-03

"ADMINISTRATIVE USE PERMIT ORDINANCE"

RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF UKIAH, STATE OF CALIFORNIA, RECOMMENDING CITY COUNCIL ADOPTION OF ZONING ORDINANCE AMENDMENTS TO ESTABLISH AN ADMINISTRATIVE USE PERMIT PROCESS, CLARIFY ANIMAL KEEPING REGULATIONS, AND CONSOLIDATE PERFORMANCE STANDARDS INTO ARTICLE 23 OF DIVISION 9 OF THE UKIAH CITY CODE

WHEREAS, on December 7, 2022, the Ukiah City Council adopted Resolution No. 2022-79 certifying the Environmental Impact Report for the Ukiah 2040 General Plan (State Clearinghouse No. 2022050556), which analyzed the environmental impacts of the City's General Plan and included adoption of a Mitigation Monitoring and Reporting Program and Statement of Overriding Considerations; and

WHEREAS, pursuant to Government Code Section 65850, the City is authorized to adopt zoning regulations, including procedures for the issuance of use permits and performance standards for land use consistent with the General Plan; and

WHEREAS, the proposed ordinance would establish a new Administrative Use Permit (AUP) process for qualifying small-scale or neighborhood-serving uses; consolidate and reorganize performance standards into a new Article 23 of Division 9, Chapter 2 of the Ukiah City Code; clarify distinctions between commercial and personal animal keeping; and update land use definitions for clarity and consistency; and

WHEREAS, the proposed ordinance implements key programs of the Ukiah 2040 General Plan Agriculture Element, including Programs C, E, and I, by reducing regulatory barriers for compatible small-scale agriculture and streamlining permit pathways for community-serving uses; and

WHEREAS, the ordinance is exempt from the California Environmental Quality Act (CEQA) pursuant to CEQA Guidelines Section 15061(b)(3), the "common sense exemption," as it can be seen with certainty that the ordinance will not result in a significant effect on the environment, nor authorize any physical development or new use types; and

WHEREAS, public notice of the Planning Commission hearing on the proposed ordinance was provided in accordance with Assembly Bill 2904 and Government Code Sections 65090 and 65091, including publication in a newspaper of general circulation, posting at the Civic Center, and online posting at least 20 days in advance of the hearing; and

WHEREAS, the Planning Commission considered all of the information presented to it, including the Staff Report, public testimony, and supporting documentation; and

WHEREAS, the Planning Commission has reviewed the ordinance, considered all written and oral testimony, and finds that the ordinance is in the public interest, supports streamlined permitting for compatible uses, and is consistent with the General Plan and applicable state law.

NOW, THEREFORE, BE IT RESOLVED that the City of Ukiah Planning Commission, based upon evidence in the record and oral and written testimony presented at public hearings, and all information contained in the record of proceedings related to the Administrative Use Permit Ordinance, makes the following findings and recommendations:

1. The above recitals are true and correct and incorporated herein by this reference.

2. The proposed changes in the Administrative Use Permit Ordinance are consistent with the City of Ukiah 2040 General Plan. Pursuant to Government Code Section 65860, a zoning ordinance is consistent with a general plan if the City has adopted a plan and the various land uses authorized by the ordinance are compatible with the objectives, policies, general land uses, and programs specified in the plan. None of the zoning district articles being modified affect conformity with the 2040 General Plan.

3. The proposed ordinance has been reviewed in compliance with the California Environmental Quality Act (CEQA) and has been found exempt from environmental review pursuant to CEQA Guidelines Section 15061(b)(3), the "common sense exemption," because it can be seen with certainty that there is no possibility the ordinance will have a significant environmental effect.

4. That the City Council adopt an ordinance making the changes shown in the Administrative Use Permit Ordinance, as shown in the attached Exhibit A.

BE IT FURTHER RESOLVED that the Planning Commission designates the City Clerk as the custodian of the document and other materials that constitute the record of proceedings upon which the Planning Commission decision herein is based. These documents may be found at the office of the City of Ukiah Department of Community Development, 300 Seminary Avenue, Ukiah, CA 95482.

PASSED AND ADOPTED by the Planning Commission of the City of Ukiah this 9th day of July 2025, by the following roll call vote:

AYES: Planning Commissioners Johnson, Hilliker, and Chair de Grassi
NOES: None
ABSENT: None
ABSTAIN: None

Craig Schlatter, AICP
Community Development Director

Alex De Grassi, Chair
City of Ukiah Planning Commission

ATTEST:

Kristine Lawler, City Clerk
City Clerk

ORDINANCE NO.

ORDINANCE OF THE CITY COUNCIL OF THE CITY OF UKIAH ADDING A NEW SECTION 9269 AND A NEW ARTICLE 23 TO DIVISION 9, CHAPTER 2 OF THE CITY CODE TO ESTABLISH PROCEDURES AND PERFORMANCE STANDARDS FOR THE ISSUANCE OF ADMINSITRATIVE USE PERMITS.

The City Council of the City of Ukiah hereby ordains as follows:

SECTION ONE. FINDINGS

1. It is a goal of the City to provide a streamlined process for administrative review and determination on requests for uses and activities that have little to no impact on adjacent sites and surroundings.

2. Administrative Use Permits (AUPs) provide a discretionary review process for uses requiring case-by-case evaluation beyond ministerial permits but not rising to the threshold of a public hearing. This process allows the City to impose conditions and ensure compatibility with surrounding land uses while streamlining review to avoid unnecessary delays or complexity.

3. Establishing clear performance standards and permit requirements for these uses is necessary to protect public health and safety, promote neighborhood compatibility, and ensure consistency with the Ukiah 2040 General Plan. These standards provide a predictable framework for reviewing uses such as animal keeping, outdoor dining, and live entertainment, while minimizing potential nuisances and conflicts between adjacent properties.

4. Pursuant to the Ukiah 2040 General Plan, and specifically Agriculture Implementation Program E, it is the policy of the City to reduce regulation for local agriculture by revising the Zoning Code to allow low-intensity agricultural activities on residential parcels, including but not limited to backyard beehives, chickens, and gardens. The revision includes objective use, development, and environmental standards, along with minimal permit fee requirements.

5. Pursuant to the Ukiah 2040 General Plan, and specifically Agriculture Implementation Program C, it is the policy of the City to adopt terminology and land use definitions consistent with those utilized by adjacent jurisdictions within the Ukiah Valley to support regional planning and potential future annexations.

6. Pursuant to the Ukiah 2040 General Plan, and specifically its Agriculture Implementation Program I, it is further the policy of the City to facilitate and streamline the permitting process for the establishment of community gardens within the City.

SECTION TWO.

Division 5, Chapter 2 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§ 4200 KEEPING LIVESTOCK INSIDE CITY LIMITS PROHIBITED WITHOUT PERMIT

A. It shall be unlawful for any person, firm, or corporation to keep, harbor or maintain, or cause, permit or suffer to be kept, harbored or maintained, within the corporate limits of the City any cow, bull, calf, horse, mule, jennie, jack, burro, sheep, goat, swine or any other livestock without then and there having a valid permit in writing issued by the Zoning Administrator of the City under the provisions of this chapter.

B. The provisions of this Chapter apply to the commercial keeping of livestock, including for sale, breeding, production, or other business purposes. This Chapter does not apply to noncommercial or personal animal keeping regulated under Section 9381 of this Code.

* * *

SECTION THREE.

Section 9016 of Division 9, Chapter 2, Article 3 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§ 9016 ALLOWED USES

The following uses are allowed in the Low Density Residential (R-1) ~~Districts~~District, pursuant to the development and operational standards of Article 20 if applicable:

* * *

Animal Raising - Personal

* * *

Community Gardens

* * *

§ 9017 PERMITTED USES

The following uses may be permitted with the securing of an appropriate use permit pursuant to the provisions contained in Article 20 of this Chapter:

* * *

Beekeeping and Apiaries

* * *

SECTION FOUR.

Section 9031 of Division 9, Chapter 2, Article 4 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§ 9031 ALLOWED USES

The following uses are allowed in Medium Density Residential (R-2) Districts, pursuant to the development and operational standards of Article 20 if applicable:

* * *

Community Gardens

* * *

§ 9032 PERMITTED USES

The following uses may be permitted in Medium Density Residential (R-2) Zoning Districts subject to first securing an appropriate use permit pursuant to the provisions contained in Article 20 of this Chapter:

* * *

Beekeeping and Apiaries

* * *

SECTION FIVE.

Section 9046 of Division 9, Chapter 2, Article 5 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§ 9046 ALLOWED USES

The following uses are allowed in High Density Residential (R-3) Districts, pursuant to the development and operational standards of Article 20 if applicable:

* * *

Animal Raising - Personal

* * *

Community Gardens

* * *

§ 9047 PERMITTED USES

The following uses may be permitted in High Density Residential (R-3) Districts subject to first securing an appropriate use permit pursuant to provisions contained in Article 20 of this Chapter:

* * *

Beekeeping and Apiaries

* * *

Outdoor Sales and Display Projects

* * *

SECTION SIX.

Division 9, Chapter 2, Article 6 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§ 9061 USES ALLOWED

The following uses are allowed in Neighborhood Commercial Zoning Districts, pursuant to the development and operational standards of Article 20 if applicable:

* * *

Animal Raising - Personal

* * *

Community Gardens

* * *

Outdoor Dining

* * *

Outdoor Sales and Display Projects

* * *

Sidewalk Cafe

* * *

Specialty food and beverage sales with tastings

* * *

§ 9062 USES PERMITTED WITH SECURING OF A USE PERMIT

The following uses may be permitted in Neighborhood Commercial (C-N) Districts, subject to first securing an appropriate use permit pursuant to provisions contained in ~~section 9262~~ Article 20 of this Cehapter:

* * *

Beekeeping and Apiaries.

* * *

SECTION SEVEN.

Division 9, Chapter 2, Article 7 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§ 9081 ALLOWED USES

The following uses are allowed in the Community Commercial (C-1) Zoning District, pursuant to the development and operational standards of Article 20 if applicable:

* * *

Animal Raising - Personal

* * *

Community Gardens

* * *

Live Entertainment

* * *

Outdoor Dining

Outdoor Sales and Display Projects

* * *

Sidewalk Cafe

* * *

Specialty food and beverage sales with tastings

* * *

§ 9082 PERMITTED USES

The following uses require approval of an appropriate use permit pursuant to the provisions contained in ~~section 9262~~Article 20 of this Cehapter:

* * *

Beekeeping and Apiaries

* * *

~~Outdoor Sales and Display Projects~~

~~Outdoor sales establishments that occur for no more than thirty (30) days within a twelve (12) month period may be considered by the Zoning Administrator. All other applications shall be heard by the Planning Commission.~~

~~A. All outdoor sales establishments shall comply with the following criteria:~~

~~1. Parking: Parking shall be designated for a minimum of three (3) automobiles, located off the public right-of-way with no automobile maneuvering permitted in the public right-of-way. The use permit may require additional parking, depending on the nature of sales proposed.~~

~~2. Signage: A maximum of twenty-five percent (25%) of the largest side of the vehicle or structure used in the sales operation. In addition, one sandwich board or A-frame sign pursuant to subsection 3227A5 of this code.~~

~~3. Utilities: The need for sanitary sewer, water, and electrical services shall be determined through the use permit process, and all hookups shall comply with this code.~~

~~4. Business License: Business license must be prominently displayed at all times, and the operator shall have proof of Board of Equalization sales permit.~~

* * *

SECTION EIGHT.

Division 9, Chapter 2, Article 8 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§ 9096 ALLOWED USES

The following uses are allowed in the Heavy Commercial (C-2) Zoning District, pursuant to the development and operational standards of Article 20 if applicable:

* * *

Animal Raising - Personal

* * *

Community Gardens

* * *

Outdoor Dining

* * *

Outdoor Sales and Display Projects

* * *

Sidewalk Cafe

* * *

Specialty food and beverage sales with tastings

* * *

§ 9097 PERMITTED USES

The following uses require approval of an appropriate use permit pursuant to the provisions contained in ~~section 9262~~Article 20 of this Chapter~~code~~:

Beekeeping and Apiaries

* * *

~~Outdoor sales establishments that occur for no more than thirty (30) days within a twelve (12) month period may be considered by the Zoning Administrator. All other applications shall be heard by the Planning Commission.~~

~~A. All outdoor sales establishments shall comply with the following criteria:~~

~~1. Parking: Parking shall be designated for a minimum of three (3) automobiles, located off the public right of way with no automobile maneuvering permitted in the public right of way. The use permit may require additional parking, depending on the nature of sales proposed.~~

~~2. Signage: A maximum of twenty five percent (25%) of the largest side of the vehicle or structure used in the sales operation. In addition, one sandwich board or "A" frame sign pursuant to subsection 3227A5 of this code.~~

~~3. Utilities: The need for sanitary sewer, water, and electrical services shall be determined through the use permit process, and all hookups shall comply with this code.~~

~~4. Business License: Business license must be prominently displayed at all times, and the operator shall have proof of board of equalization sales permit.~~

* * *

SECTION NINE.

Division 9, Chapter 2, Article 9 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§ 9111 USES ALLOWED

The following uses are allowed in Manufacturing (M) Districts, pursuant to the development and operational standards of Article 20 if applicable:

* * *

C. Animal Raising - Personal

D. Community Gardens

E. Outdoor Sales and Display Projects

§ 9112 USES PERMITTED SUBJECT TO FIRST SECURING A USE PERMIT

The following uses may be permitted in Manufacturing (M) Districts subject to first securing an appropriate use permit, as provided in Article 20 of this Chapter, in each case:

Beekeeping and Apiaries

* * *

SECTION TEN.

Section 9160 of Division 9, Chapter 2, Article 13 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§ 9160 AGRICULTURAL EXCLUSIVE OR A-E DISTRICT

* * *

C. Uses Allowed:

* * *

2. Agricultural Uses:

* * *

j. Beekeeping and Apiaries

3. Civic Uses:

a. Community Gardens, pursuant to the development and operational standards of Article 20.

~~a~~b. Day care facilities/small schools.

~~b~~c. Safety services.

~~c~~d. Utility service minor.

* * *

SECTION ELEVEN.

Division 9, Chapter 2, Article 15 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§ 9070.1 ALLOWED USES

The following uses are allowed in the Public Facilities (PF) Zoning District, pursuant to the development and operational standards of Article 20 if applicable:

* * *

Animal Raising - Personal

* * *

Community Gardens

* * *

Live Entertainment

* * *

Specialty food and beverage sales with tastings

* * *

§ 9070.2 PERMITTED USES

The following uses are permitted in the Public Facilities (PF) Zoning District subject to first securing an appropriate use permit pursuant to the provisions contained in Article 20 of this Chapter:

Beekeeping and Apiaries

* * *

SECTION TWELVE.

A new Section 9269 is hereby added to Division 9, Chapter 2, Article 20 of the Ukiah City Code and shall read as follows:

§ 9269 ADMINISTRATIVE USE PERMITS

Administrative Use Permit application and processing procedures and standards shall be as follows:

A. Purpose. Administrative use permits allow certain uses to be established in particular zoning districts if they comply with the specific criteria and performance standards as established in Article 23 of this Chapter, entitled "Performance Standards," and other standards as required elsewhere in this Article. Administrative use permits are intended to streamline the discretionary permit process for select uses where clear performance standards are established and extensive public review is not warranted. The performance standards established in Article 23 of this Chapter are designed to ensure that such uses have an impact only on immediately adjacent properties and can be modified and/or conditioned to ensure compatibility.

B. Applicability. The requirements, procedures, and standards set forth in this Section shall be applicable to the uses listed in Division 9, Chapter 2, Article 23 of this Code, subject to any exceptions or additional requirements and standards as set forth in that Article..

This Section shall not apply to facilities or uses governed by Division 2, Chapter 2, Article 10 (entitled "Broadband Deployment") of the Ukiah City Code, which are subject to separate review procedures and standards.

C. Approval Authority. The Community Development Director may approve, conditionally approve, or deny an administrative use permit application, unless otherwise restricted by state law. Development must comply with all of the required standards in Article 23 of this Chapter and with all other requirements of

this Section unless specifically exempted in Article 23 of this Chapter.

D. Application. Applications for administrative use permits shall be initiated by submitting the following information to the Planning Division of the Community Development Department: a completed application form, signed by the property owner or authorized agent, accompanied by the required fee, and any other information, plans or maps prescribed by the Community Development Director. Application procedures and processing timeframes shall be in accordance with state law and procedural guidelines established by the Community Development Director.

E. Public notice and hearing. Public notice and/or hearing are not required for issuance of an administrative use permit.

F. Conditions of approval. The Community Development Director may apply reasonable conditions of approval to bring the development into conformity with requisite performance standards.

G. Findings. The Community Development Directormay issue an administrative use permit if the following findings can be made:

1. The proposed use is listed in this Chapter as a use permitted pursuant to an administrative use permit and subject to performance standards;

2. The proposed use as conditioned conforms to the performance standards for the proposed use as outlined in the Performance Standards set forth in Article 23 of this Chapter;

3. The site is physically suited for the type, density, and intensity of the proposed use, including access, utilities, and the absence of physical constraints, and can be conditioned to meet all related performance criteria and development standards.

4. Any other findings required under Article 23 of this Chapter for the specific use;

5. The use, together with the conditions applicable thereto, will not be detrimental to the public health, safety or welfare, or materially injurious to properties or improvements in the vicinity, or to the general welfare of the city;

H. Notice of decision. The Community Development Director shall prepare a written decision which shall contain the findings of fact upon which such decision is based and conditions of approval, if any. The decision shall be mailed and/or emailed to the applicant.

I. Appeals. Appeals of decisions on administrative use permits shall be filed within five (5) working days of the issuance of the permit. Appeals shall be filed and processed in accordance with the procedure for appeal of a determination regarding a minor discretionary planning permit as set forth in Section 9266 of this Chapter.

J. Effective date of permit. An administrative use permit shall become effective at the end of the appeal period as specified in Section 9266 of this Chapter, unless appealed.

K. Approval to run with the land. Any administrative use permit approval shall run with the land and shall continue to be valid for the time frame specified whether or not there is a change of ownership of the site

or structure to which it applies.

L. Extensions. An administrative use permit may be extended by the Community Development Director if the findings required by Subsection H of this Section remain valid and application is made prior to expiration.

M. Amendments—New application. Requests for changes in the conditions of approval of an administrative use permit, or a change to site plans or operation that would affect a condition of permit approval, shall be treated as an administrative use permit amendment. The procedures for filing and processing an application for an administrative use permit amendment shall be the same as those established for an initial or new administrative use permit application.

N. Revocation. An administrative use permit that is exercised in violation of a condition of approval or a provision of this title may be revoked, as provided in the revocation procedures set forth in Section 9262.H of this Chapter.

O. New applications following denial or revocation. If an application for an administrative use permit is denied or revoked, no new application for the same, or substantially the same, administrative use permit shall be filed within one year of the date of denial or revocation of the initial application, unless the denial is made without prejudice.

P. Expiration. Administrative use permits are valid for one year unless a different expiration date is stipulated at the time of approval, a building permit has been issued and construction diligently pursued, a certificate of occupancy has been issued, or the permit is renewed and extended.

SECTION THIRTEEN.

Article 21 in Division 9, Chapter 2 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§ 9278 DEFINITIONS

* * *

KENNEL: Any lot, building, structure, or premises whereon or wherein five (5) or more dogs or five (5) or more cats, over the age of four (4) months are kept or maintained for ~~any~~ commercial purpose, including but not limited to boarding, breeding, training, grooming, or sale. This definition shall not apply to the personal, non-commercial keeping of domestic pets by the occupant(s) of a dwelling unit. This definition also does not apply~~. Kennel definition shall not be construed as applying~~ to a duly licensed veterinary hospital or public animal shelter.

* * *

SECTION FOURTEEN.

A new Article 23, entitled "Performance Standards for Administrative Use Permits and for Specific Allowed Uses" is hereby added to Division 9, Chapter 2 of the Ukiah City Code and shall read as follows:

§ 9380 PURPOSE AND INTENT

Performance standards provide criteria for issuing administrative use permits, certain other use permits, and specific allowed uses that require minimal discretion and review. (See Section 9269 of this Code for the requirements and procedures for the Administrative Use Permit process.) The performance standards listed in this Article are intended to explicitly describe the required location, configuration, design, amenities and operation of specified uses. The performance standards also mitigate potential adverse impacts on the neighborhood and maintain harmonious uses in the area. The performance standards are consistent with the goals and policies of the City's General Plan.

§ 9381 ANIMALS WITHIN THE CITY

A. Purpose and Applicability. The provisions of this Section established performance standards for the noncommercial keeping of certain animals within the City of Ukiah. The intent is to protect the public health, safety, and welfare while supporting personal food production, educational programs (e.g., 4-H/FFA), and compatibility with residential neighborhoods.

All other animals commonly kept as pets or for personal enjoyment (e.g., fish, dogs, cats, potbellied pigs, reptiles, birds, hamsters) are exempt from these standards unless separately regulated by the Ukiah Municipal Code or determined by the Community Development Director to pose a nuisance or health risk.

This Section does not apply to commercial livestock operations, which are governed by Division 5, Chapter 2 of the Ukiah City Code.

Furthermore, roosters, turkeys, ducks, geese, and swine, are prohibited in all zoning districts within the City except for the Agricultural Exclusive (AE) and Combining Agricultural (-A) zoning districts, in which this use is subject to the permitting requirements set forth in Article 10 or Article 13 of this Chapter as appropriate.

B. Animal Raising – Personal. Animal Raising – Personal, as defined in Section 9278 of this Code and as may be amended, shall be allowed in any zoning district provided that all standards set forth in the definition in Section 9278 apply.

An application for an Administrative Use Permit allowing exceptions to the standards in Section 9278 may be authorized under Section 9269 of this Chapter. Issuance of an Administrative Use Permit in that instance will require the following findings:

1. Compliance with Applicable Laws. The keeping of the animal(s) will not violate any provision of the Ukiah City Code or any other applicable provision of law.

2. Humane Treatment of Animals. The keeping of the animal as proposed will not result in an animal receiving inhumane treatment.

3. Odors. The keeping of the animal will not result in obnoxious odors at nearby properties adversely affecting the enjoyment of such property.

4. Flies. The keeping of the animal(s) will not cause or result in flies or other insects adversely affecting the enjoyment of nearby property.

5. Noise. The keeping of the animal(s) will not result in noises which adversely affect the enjoyment of nearby property.

6. Nuisances. The keeping of the animal(s) will not result in other public or private nuisances.

7. Public Health, Sanitation, Safety, Welfare. The keeping of the animal(s) will not result in an adverse effect on the health, sanitation, safety or welfare of an occupant of the premises or other nearby residents.

8. Procreation. The keeping of the animal(s) will not result in procreation which adversely affects nearby properties or the natural habitat.

C. Beekeeping and Apiaries.

1.The keeping of bees in four beehives or less shall be allowed with approval of an administrative use permit provided they comply with the following standards and requirements:

a. Colony density

i. The minimum lot size required for an apiary shall be 4,000 square feet.

ii. The maximum number of hives allowed in an apiary shall be determined based on lot sizes as follows:

1. 4,000 square feet to 10,000 square feet: 2 hives

2. 10,001 square feet to 43,560 square feet: 4 hives

3. On any lot of 10,001 square feet in size or larger, more than four beehives may be kept, provided there is an additional lot area of 2,500 square feet for each hive. If a skep, barrel, log gum, or other container are used instead of boxes for a hive, the dimensions of the hive shall not exceed the limits of this subsection.

b. Care and Maintenance

i. Hives should not be kept or maintained within any required front yard area. Hives located within the side and rear yard areas of a lot should maintain a minimum of a 10-foot setback from side and rear property lines to the hives.

ii. Hives and apiaries shall be kept in a manner that facilitates inspection and shall be maintained in a sound and usable condition.

iii. In all instances, there shall be one adequate and accessible water source provided on site and located within 20 feet of the beehive(s). The water source shall be maintained so as not to become stagnant.

iv. A flyway barrier at least six feet in height but no greater than seven feet in height shall be erected parallel to the lot line between the hive opening and any lot line located within 25 feet. The flyway barrier shall consist of a wall, solid fence, dense vegetation, or a combination thereof extending five feet beyond the hive in each direction. A flyway barrier of dense vegetation shall not be limited to seven feet in height provided that the initial planting is four feet in height and the vegetation normally reaches six feet in height or higher. Barriers shall be

maintained in good condition so that all bees are forced to fly at an elevation of at least six feet above ground level.

2. All beekepers are required to register their bee colonies with the Mendocino County Agriculture Commissioner and adhere to all state laws related to the keeping of bees, including California Food and Agricultural Code, Division 13, Chapter 1, as may be amended from time to time. Beekepers must also notify the Agriculture Commissioner upon relocation of bee colonies.

D. Nonconforming Animal Keeping, Declaration of Public Nuisance. The City Council declares to be a public nuisance any lot where animal keeping is operating in a manner that is not in conformance with this Section.

E. Other Applicable Laws. Nothing in this Section shall exempt any property from enforcement under applicable nuisance, animal control, or public health laws. The Community Development Director may require an administrative use permit if the number, condition, or management of noncommercial animal keeping poses a risk to health, safety, or welfare.

§ 9382 OUTDOOR SALES AND DISPLAY PROJECTS

Outdoor sales establishments are allowed in all Commercial (C-N, C-1, C-2), and Manufacturing Zoning Districts provided that they occur for no more than thirty (30) days within a twelve (12) month period, in accordance with the below standards. Outdoor sales establishments that exceed thirty (30) days within a twelve (12) month period, that are located in Residential (R-1, R-2, or R-3) Zoning Districts or that do not meet the following performance standards may be permitted through an Administrative Use Permit, as regulated by Section 9269 of this Chapter.

A. Parking: Parking shall be designated for a minimum of three (3) automobiles, located off the public right-of-way with no automobile maneuvering permitted in the public right-of-way.

B. Signage: A maximum of twenty-five percent (25%) of the largest side of the vehicle or structure used in the sales operation. In addition, one sandwich board or A-frame sign pursuant to the standards set forth in Subsection 3227.A.5 of this Code.

C. Utilities: The need for sanitary sewer, water, and electrical services shall be determined through the Administrative Use Permit process, and all connections shall comply with this Code.

D. Business License: Business license must be prominently displayed at all times, and the operator shall have proof of Board of Equalization sales permit.

§ 9383 COMMUNITY GARDENS

Community gardens may be allowed in any zoning district and shall comply with the following standards and requirements:

A. Days and Hours of Operation: Seven (7) days a week from seven o'clock (7:00) A.M. until dusk.

B. Fencing: Fencing is discouraged. When fencing is required to prevent vandalism or theft, trespassing, and/or encroachment by animals, fencing shall comply with the following:

1. Open Fencing: Open fencing (such as chain link, wrought iron, deer) up to seven feet (7') in height, measured from the grade adjacent to the fence to the top of the fence, is allowed at the property line or set back from the property line. This type of fencing allows the garden to be protected and maximizes the size of the garden while creating an open, pedestrian-oriented use consistent with the purposes of this code.

2. Solid Fencing: Solid fencing (such as wood, masonry) is prohibited since this closes off the site to the public realm, presents a solid unbroken surface which is not pedestrian-oriented, and reduces the size of the garden.

C. Herbicides and Pesticides: All pest and weed control shall be accomplished through organic means using the least toxic methods available. If unsure how to combat pests, weeds, and diseases organically, contact the garden team leader or other qualified professionals or organizations for guidance and resources.

D. Motorized Equipment: Use of motorized equipment (such as weed eaters, leaf blowers, rototillers) shall be limited to weekdays from eight o'clock (8:00) A.M. to seven o'clock (7:00) P.M. and weekends and holidays recognized by the City of Ukiah from ten o'clock (10:00) A.M. to five o'clock (5:00) P.M.

E. Noise: Compliance with the City of Ukiah noise regulations and restrictions set forth in Division 7, Chapter 1, Article 6 of this Code is required, except as indicated in Subsection D of this Section, Motorized Equipment, which may be more restrictive.

F. Parking: A minimum of one parking space along the street frontage of the community garden shall be provided. Vehicle use by members of the community garden should be limited to taking supplies to and from the garden, rainy or poor weather, or assisting gardeners with disabilities. Users of the garden shall be encouraged to walk or bike to the site in order to reduce the need for parking and parking impacts on neighboring uses.

G. Signs: Signs are limited to identification, informational, and directional signs in conformance with the sign regulations set forth in Division 3, Chapter 7 of this Code.

H. Structures – Accessory: The following accessory structures are allowed: tool sheds, greenhouses, cold-frames, hoop houses, compost bins, rain barrel systems, picnic tables, benches, bike racks, garden art, and fences subject to the development standards of the zoning district in which the community garden is located and the requirements of this Section. Commercially maintained portable bathrooms are allowed as accessory structures; provided, that they comply with accessibility standards and comply with the development standards of the zoning district in which the community garden is located.

I. Water Use: Every effort shall be made to reduce water usage. Drip irrigation is required where feasible. Mulch and compost shall be used in order to reduce the amount of water needed for garden plots.

J. Prohibitions: Smoking, drinking alcoholic beverages, using illegal drugs, and gambling are prohibited. Weapons, pets and other animals (except service animals) are also prohibited.

Community gardens that do not meet the above performance standards may be permitted through an Administrative Use Permit, as regulated by Section 9269 of this Chapter.

§ 9384 LIVE ENTERTAINMENT

A. Live entertainment uses may occur in the C-1, C-2, and P-F zoning districts provided they comply with the following standards and requirements:

1. Live entertainment shall commence no earlier than ten o'clock (10:00) A.M. and shall end at eleven o'clock (11:00) P.M. and is limited to two (2) times a week.

2. Live entertainment shall not violate the noise regulations and restrictions set forth in Division 7, Chapter 1, Article 6 of this Code.

3. The number of people within a building where live entertainment is performing shall not exceed the occupancy standards contained in the California Building Code or Ukiah City Code.

4. Businesses desiring to have live entertainment shall provide adequate security during and after live entertainment events.

5. Parking shall generally comply with the Ukiah City Code, although on-street parking within commercial zoning districts may be included in the number of parking spaces provided for the live entertainment.

6. Any building proposed for live entertainment shall comply with all Fire Code requirements and shall be reviewed and approved by the Ukiah Fire Marshal.

B. Management Plan Submittal: As a part of the application for the conducting of live entertainment, the applicant shall submit a management plan addressing the items listed below, which will be distributed by the Planning Division to the Ukiah Police Department and Ukiah Valley Fire Authority for review and comments. The management plan shall, at a minimum, include the following:

1. Potential for loitering and how the business will preclude loitering.

2. Adequacy of lighting for security and safety purposes.

3. Adequacy of parking.

4. Compatibility and suitability with the existing and allowed uses in the area and/or character of the area, including, but not limited to, proximity to sensitive land uses such as residences, schools, parks, daycare facilities, and churches.

5. Details regarding how security will be provided during and after live entertainment events.

6. Likelihood the use would facilitate the vitality, economic viability, and/or provide recreational or entertainment opportunities in an existing commercial area without presenting a significant impact on health and safety.

7. Hours of operation for the business and hours of proposed live entertainment.

8. Other information deemed necessary on a case-by-case basis.

C. Relief from any of the standards or requirements may be sought through the pursuit of an Administrative Use Permit, as regulated within Section 9269 of this Chapter. The determination shall be based, in part, on how much relief is being sought and the location of the proposed live entertainment and its potential to impact the area.

§ 9385 OUTDOOR DINING

On-site outdoor dining may be allowed in the C-N, C-1 and C-2 zoning districts, provided it is incidental to and part of the operation of a restaurant located on the same parcel, and it complies with the standards and requirements listed below:

A. Purpose: The provisions of this Section are intended to allow outdoor dining in association with a restaurant located on the same parcel as the outdoor dining, where the outdoor dining is clearly incidental to the adjacent restaurant use and will not negatively impact the operations and function of the existing restaurant, including parking facilities, pedestrian access and circulation, and disabled access facilities.

B. Location of Outside Dining: Outdoor dining shall be located on the same site as the restaurant which the outdoor dining will serve. Outdoor dining facilities, such as tables, chairs, umbrellas, etc., shall not be located in pedestrian walkways, required parking spaces, or disabled access facilities (such as parking spaces, walkways, entries, etc.). Outdoor dining areas may be located in landscaped areas if located in such a manner as to not damage the landscaping.

C. Hours of Operation: Days and hours of operation for the outdoor dining shall not extend beyond the hours of operation for the restaurant which it serves. Tables, chairs, and all other furniture used in the operation of outdoor dining shall be removed from any pedestrian walkways and stored indoors at night and whenever the cafe is not in operation.

D. Live Entertainment: Outdoor dining shall not be used for live entertainment unless in compliance with Section 9384 of this Code.

E. Tables, Chairs, Furniture, Signage:

1. In order to provide adequate and safe ingress/egress, a minimum unobstructed pedestrian walkway width of forty-eight inches (48") or the width of the doors, whichever is greater, shall be maintained. The required width of the unobstructed pedestrian walkway shall extend from the front of the door(s) to the public sidewalk. A reduced width may be approved by the Building Official in compliance with the building code.

2. A minimum of sixty inches (60") of unobstructed space shall be maintained between exits and any furniture or fixtures related to outdoor dining, or as required by the building code, whichever is greater.

3. All outdoor dining furniture, including tables, chairs, umbrellas, and planters, shall be movable.

4. Umbrellas shall be secured with a minimum base of not less than sixty (60) pounds and shall leave a vertical clearance of seven feet (7') from the sidewalk surface.

5. Outdoor heaters are allowed subject to fire and building code compliance. Non-live music and/or speakers may be used provided the music does not violate the noise regulations and restrictions set forth in Division 7, Chapter 1, Article 6 of this Code.

6. No signage shall be allowed in the outdoor dining area except for the name of the establishment on an awning or umbrella fringe and in compliance with this Section and the signage regulations set forth in Division 3, Chapter 7 of this Code.

F. Maintenance: The property and/or business owner are responsible for maintaining all outdoor dining furnishings and the outdoor dining area in good condition, including, but not limited to, the following:

1. All outdoor dining furnishings and all exterior surfaces within the outdoor dining area shall be easily cleanable and kept clean and free of debris.

2. The outdoor dining area and adjacent areas kept in a clean and safe condition.

G. Food and Beverages: Outdoor dining areas may only serve food and nonalcoholic beverages prepared or stocked for sale at the adjoining indoor restaurant; provided, however, that the service of beer or wine or both, solely for on-premises consumption by customers within the outdoor dining area, may be authorized by the Community Development Director and Police Department if each of the following requirements are met:

1. The outdoor dining operation is duly licensed, or prior to the service of any beer or wine, will be duly licensed by State authorities to sell beer or wine for consumption within the outdoor dining area.

2. The authorized outdoor dining area is identified in a manner which will clearly separate and delineate it from the areas of the sidewalk that will remain open to pedestrian traffic.

3. One or more signs, as approved as part of the encroachment permit, are posted during all times the sidewalk cafe is in operation, which shall give notice to the cafe's customers that the drinking of beer or wine or the carrying of any open container which contains beer or wine is prohibited and unlawful outside the delineated outdoor dining area.

Outdoor dining areas authorized by the Community Development Department and Police Department and in compliance with the requirements of this section are exempt from section 6000 of this code.

H. Service Requirements:

1. Service areas (such as busing and service stations) may be located within the outdoor dining area. Service areas shall comply with subsection B of this section (Location of Outside Dining). Outdoor food preparation in the outdoor dining area is prohibited.

2. Restrooms for the outdoor dining area shall be provided in the adjoining indoor restaurant. Seating for the outdoor dining may be counted in determining the restroom requirements for the indoor restaurant at the discretion of the Building Official.

I. Revocation: The outdoor dining may be revoked by the City upon finding that one or more of the

requirements of this section have been violated or that the outdoor dining is being operated in a manner that constitutes a nuisance.

§ 9386 SIDEWALK CAFE

A. A sidewalk cafe may be allowed in the C-N, C-1, and C-2 zoning districts, provided it is incidental to and part of the operation of a restaurant and it complies with the standards and requirements listed below.

B. Purpose: The provisions of this section are intended to allow a sidewalk cafe to operate in association with an allowed restaurant use, where the sidewalk cafe is clearly incidental to the restaurant use and will not negatively impact the right-of-way.

C. Permit Requirements: A sidewalk cafe shall require the approval of an encroachment permit from the Department of Public Works and Planning and Community Development Department.

D. Limitations and Requirements: A sidewalk cafe may be allowed only where allowed by section 9385 of this code and only when the sidewalk cafe is incidental to and part of the operation of an adjacent restaurant and when in compliance with the following requirements of this section:

1. Where Permissible: A sidewalk cafe may be located on a public sidewalk immediately adjacent to and abutting the indoor restaurant which operates the cafe; provided, that the area in which the sidewalk cafe extends is no farther along the sidewalk frontage than the operating indoor restaurant.

2. Location of Sidewalk Cafes: Each cafe shall be confined to a defined location on the sidewalk immediately adjacent to the restaurant which operates the cafe.

3. Hours of Operation: Sidewalk cafes may operate on days whenever fair weather would enhance outdoor dining. The hours of operation shall not exceed eight o'clock (8:00) A.M. to nine o'clock (9:00) P.M. Tables, chairs, and all other furniture used in the operation of a sidewalk cafe shall be removed from the sidewalk and stored indoors at night and whenever the cafe is not in operation. Additional hours may be authorized contingent up on the approval of an Administrative Use Permit.

4. Sidewalk Clearances: A sidewalk cafe may be allowed only where the sidewalk is wide enough to adequately accommodate the usual pedestrian traffic in the area, to comply with California State accessibility standards and federal ADA requirements, and the operation of the proposed cafe.

5. Live Entertainment: A sidewalk cafe shall not be used for live entertainment. Live entertainment at sidewalk cafes may be authorized in compliance with Section 9384 of this Code.

E. Tables, Chairs, Furniture, Signage:

1. All tables and chairs comprising a sidewalk cafe shall be situated in a safe fashion and away from any sidewalk or street barrier including a bollard, and shall not be within eight feet (8') of any designated bus stop.

2. The dining area shall not impede the use of public furnishings such as lighting, benches, etc.

3. In order to provide adequate and safe ingress/egress, a minimum unobstructed public sidewalk width of forty-eight inches (48") shall be maintained for the entire length of the sidewalk cafe. The required width shall extend from the front of the door(s) to the end of the sidewalk cafe.

4. A minimum of sixty inches (60") of unobstructed space shall be maintained between exits and any furniture or fixtures related to the sidewalk cafe, or as required by the building code, whichever is greater.

5. All sidewalk cafe furniture, including tables, chairs, umbrellas, and planters, shall be movable.

6. Umbrellas shall be secured with a minimum base of not less than sixty (60) pounds and shall leave a vertical clearance of seven feet (7') from the sidewalk surface.

7. Outdoor heaters are allowed subject to fire and building code compliance. Music and/or speakers may be authorized contingent up on the approval of an Administrative Use Permit.

8. No signage shall be allowed at the sidewalk cafe except for the name of the establishment on an awning or umbrella fringe and in compliance with this section and the signage regulations set forth in Division 3, Chapter 7 of this Code.

9. All furnishings and other items associated with the sidewalk cafe shall be removed from the sidewalk during nonoperation hours of the cafe. Storage of these items outside may be authorized contingent up on the approval of an Administrative Use Permit.

10. Any proposed seating in the vicinity of street trees shall comply with the City's Management Guidelines adopted December 1, 2010.

F. Maintenance: The permittee is responsible for maintaining all outdoor dining furnishings and the sidewalk cafe area in good condition, including, but not limited to, the following:

1. All outdoor dining furnishings and all exterior surfaces within the sidewalk cafe area shall be easily cleanable and kept clean and free of debris.

2. The sidewalk cafe area and adjacent areas shall be kept in a clean and safe condition.

G. Food and Beverages: A sidewalk cafe may serve only food and nonalcoholic beverages prepared or stocked for sale at the adjoining indoor restaurant; provided, however, that the service of beer or wine or both solely for on-premises consumption by customers within the areas of the sidewalk cafe may be authorized by the Community Development Department and Police Department as part of the required encroachment permit if each of the following requirements are met:

1. The sidewalk cafe operation is duly licensed, or prior to the service of any beer or wine will be duly licensed by State authorities to sell beer or wine for consumption within the area of the sidewalk cafe.

2. The area in which the sidewalk cafe is authorized is identified in a manner, as part of the encroachment permit, which will clearly separate and delineate it from the areas of the sidewalk that will remain open to pedestrian traffic.

3. One or more signs, as approved as part of the encroachment permit, are posted during all times the sidewalk cafe is in operation, which shall give notice to the cafe's customers that the drinking of beer or wine or the carrying of any open container which contains beer or wine is prohibited and unlawful outside the delineated area of the sidewalk cafe. Sidewalk cafes authorized by the Community Development Department and Police Department as part of the required encroachment permit and in compliance with the requirements of this section are exempt from section 6000 of this code.

H. Service Requirements:

1. The outdoor preparation of food and busing and service stations are prohibited at the sidewalk cafe. Outdoor service station may be authorized contingent up on the approval of an Administrative Use Permit.

2. Restrooms for the sidewalk cafe shall be provided in the adjoining indoor restaurant. Seating for the sidewalk cafe may be counted in determining the restroom requirements for the indoor restaurant at the discretion of the Building Official.

3. Trash and refuse receptacles for the sidewalk cafe shall not be permitted within the area designated for the sidewalk cafe or on adjacent sidewalk areas and the permittee shall remove trash and litter as they accumulate. Trash and/or refuse containers may be authorized within the outdoor dining area or adjacent sidewalk areas contingent on the approval of an Administrative Use Permit.

I. Power to Prohibit Operation of the Sidewalk Cafe: Any encroachment permit issued for a sidewalk cafe shall provide that the City shall have the right and power, acting through the City Manager or designee, to prohibit the operation of a sidewalk cafe at any time because of anticipated or actual problems or conflicts in the use of the sidewalk area. Such problems may arise from, but are not limited to, scheduled festivals and similar events, or parades or marches, or repairs to the street or sidewalk, or from demonstrations or emergencies occurring in the area. To the extent possible, the permittee shall be given prior written notice of any time period during which the operation of the sidewalk cafe will be prohibited by the City, but any failure to give prior written notice shall not affect the right and power of the City to prohibit the cafe's operation at any particular time.

J. Conditions: In connection with granting the encroachment permit for a sidewalk cafe, conditions may be imposed in granting approval as deemed necessary for the proposed operation to meet the operating requirements of this section.

K. Modifications: In the event the City determines during the operation of an approved sidewalk cafe that additional or revised conditions are necessary in order for the sidewalk cafe to comply with the requirements of this section, the City shall have the ability to add additional conditions to the approved encroachment permit.

L. Revocation: The encroachment permit to operate a sidewalk cafe may be revoked by the City upon

finding that one or more conditions of the permit or this section have been violated or that the sidewalk cafe is being operated in a manner that constitutes a nuisance, or that the operation of the sidewalk cafe unduly impedes the movement of pedestrians past the sidewalk cafe. Revocations may be appealed per the process outlined in Section 5613 of this Code.

§ 9387 SPECIALTY FOOD AND BEVERAGE SALES WITH TASTINGS

Specialty food and beverage sales with tastings may be allowed in the C-N, C-1, C-2, and P-F zoning districts provided they comply with the following standards and requirements:

A. Days and Hours of Operation: Days and hours of operation shall be limited to daily from ten o'clock (10:00) A.M. to ten o'clock (10:00) P.M. Additional hours may be authorized with approval of an administrative use permit.

B. Live Entertainment: Live entertainment is allowed in compliance with Section 9384 of this code and may perform until eight o'clock (8:00) P.M. Other arrangements for live entertainment may be authorized with approval of an administrative use permit.

C. Outdoor Seating: Outdoor seating is allowed in compliance with the applicable requirements for Outdoor Dining included in Section 9385 of this Code or Sidewalk Cafes in Section 9386 of this Code.

D. Administrative Use Permit: An application for an Administrative Use Permit to allow additional operating hours and/or live entertainment in a manner that exceeds the operating characteristics required in this Section may be authorized as set forth in Section 9269 of this Chapter, and shall incorporate findings that address the following considerations:

1. Potential for loitering and how the business will preclude loitering.

2. Adequacy of lighting for security and safety purposes.

3. Adequacy of parking.

4. Compatibility and suitability with the existing and allowed uses in the area and/or character of the area, including but not limited to proximity to sensitive land uses such as residences, schools, parks, daycare facilities, and churches.

5. Likelihood the use would facilitate the vitality, economic viability, and/or provide recreational or entertainment opportunities in an existing commercial area without presenting a significant impact on health and safety.

6. Details regarding how security will be provided during and after live entertainment events.

7. Other information deemed necessary on a case-by-case basis.

SECTION FIFTEEN.

The following sections of the Ukiah City Code shall be repealed:

1. Article 15.6 in Division 9, Chapter 2.

2. Section 9182

2. Section 9184

SECTION SIXTEEN.

1. Publication: Within fifteen (15) days after its adoption, this Ordinance shall be published once in a newspaper of general circulation in the City of Ukiah. In lieu of publishing the full text of the Ordinance, the City may publish a summary of the Ordinance once 5 days prior to its adoption and again within fifteen (15) days after its adoption.

2. Effective Date: The ordinance shall become effective thirty (30) days after its adoption.

3. Severability: If any section, subsection, subdivision, paragraph, sentence, clause or phrase of this Ordinance, or its application to any person or circumstance, is for any reason held to be invalid or unenforceable, such invalidity or unenforceability shall not affect the validity or enforceability of the remaining sections, subsections, subdivisions, paragraphs, sentences, clauses or phrases of this Ordinance, or its application to any other person or circumstance. The City Council of the City of Ukiah hereby declares that it would have adopted each section, subsection, subdivision, paragraph, sentence, clause or phrase hereof, irrespective of the fact that any one or more other sections, subsections, subdivisions, paragraphs, sentences, clauses or phrases hereof be declared invalid or unenforceable.

Introduced by title only on , 2025, by the following roll call vote:

AYES:
NOES:
ABSENT:
ABSTAIN:

Adopted on , 2025, by the following roll call vote:

AYES:
NOES:
ABSENT:
ABSTAIN:

Douglas F. Crane, Mayor

ATTEST:

Kristine Lawler, CMC/City Clerk

Agenda Item No: 8.c.

MEETING DATE/TIME: 9/3/2025

ITEM NO: 2025-947

City of Ukiah

AGENDA SUMMARY REPORT

SUBJECT: Adoption of an Ordinance Amending the City's Accessory Dwelling Unit and Junior Accessory Dwelling Unit Regulations to Ensure Compliance with State Law and the Findings of the California Department of Housing & Community Development.

DEPARTMENT: Community Development

PREPARED BY: Jesse Davis, Chief Planning Manager, Katherine Schaefers, Planning Manager

PRESENTER: Consent Calendar

ATTACHMENTS:

1. HCD ADU Findings Letter - City of Ukiah (04.24.2025)
2. Response to HCD Findings
3. PC Resolution #2025-02
4. Ordinance

Summary: Council will consider adoption of an ordinance amending the City's accessory dwelling unit and junior accessory dwelling unit regulations to ensure compliance with state law and the findings of the California Department of Housing & Community Development.

Background:

Over the past decade, State housing legislation related to Accessory Dwelling Units (ADUs) has steadily reduced local discretion with the goal of encouraging new housing starts. To remain compliant with changes in State law, the City of Ukiah has amended its local regulations numerous times over the past decade.

The first set of amendments began in 2017 to implement Assembly Bill (AB) 2299, Senate Bill (SB) 1069, and AB 2406. For example, AB 2299 required local governments to ministerially approve (non-discretionary) ADU applications if they met standards around parking, size, and setbacks.

Additional amendments followed in 2020 to address AB 68, AB 881, SB 13, AB 670, and AB 587. AB 670 made covenants or HOA rules that prohibit ADUs or JADUs unenforceable, while SB 13 waived impact fees for ADUs under 750 sq ft and required any fees for larger units to be proportional to size.

In 2024, the City adopted Ordinance No. 1244, which relocated ADU and Junior ADU (JADU) regulations into standalone sections of the Ukiah City Code to provide greater clarity and usability. That same year, the State adopted several new laws to accelerate ADU and JADU production, including SB 1211. This legislation increases the number of detached ADUs allowed on multifamily properties and removes certain local parking replacement requirements.

On April 24, 2025, HCD issued formal findings (Attachment 1) related to Ordinance No. 1244, which had been adopted by the City on September 4, 2024, and submitted for State review on September 5, 2024. HCD determined the City's ordinance did not fully comply with State ADU law under Government Code section 66326(a). The City submitted a written response on May 23, 2025, included as Attachment 2. On June 3, 2025, HCD confirmed that the response brought the ordinance into substantial compliance. Final adoption and submittal of the amended ordinance are necessary to complete this compliance process.

On July 9, 2025, the Ukiah Planning Commission reviewed the proposed amendments to the Ukiah City Code and unanimously recommended approval to the City Council by adopting PC Resolution No. 2025-04 (Attachment 3).

At its Regular Meeting on August 20, 2025, the Ukiah City Council unanimously moved to introduce the ordinance for adoption (5-0).

Discussion: The proposed ordinance (Attachment 4) is intended to bring the City's Accessory Dwelling Unit (ADU) and Junior Accessory Dwelling Unit (JADU) regulations into compliance with current State law and the findings issued by the California Department of Housing and Community Development (HCD) in April 2025. These findings responded to the City's previously adopted Ordinance No. 1244 from September 2024. The proposed ordinance is intended to align with Government Code requirements and preserve the City's 6th Cycle Housing Element certification.

Several of the proposed revisions are minor or clarifying in nature. For example, HCD requires clearer language regarding application approval process and timelines. The proposed update replaces the language "acted upon" with "approve or deny" to meet the requirements of Government Code Section 65852.2. The ordinance also proposes that uncovered parking spaces, in addition to garages and carports, would not need to be replaced if converted to or demolished for an ADU. This resolves a technical issue identified by HCD, but in practice was already addressed by City Staff. Another proposed revision explicitly states that fire sprinklers are not required for ADUs if they are not required in the primary residence, and that construction of an ADU would not trigger new sprinkler requirements in the main dwelling. While this reflects existing State law and the current practices of the City, clarification is necessary for compliance as conveyed by HCD.

More substantive changes under the proposed ordinance include:

- Allowing up to eight detached ADUs on lots with existing multifamily dwellings, consistent with SB 1211.
- Removing unit size caps for ADUs on multifamily properties and exempting certain conversions from size limitations.
- Codifying AB 2533, which allows owners of unpermitted ADUs constructed before January 1, 2020, to obtain permits to permanently "legalize" their ADU, while only meeting the requirements of Health and Safety Code (H&SC) 17920.3. This code section requires buildings to meet sanitary, structural, electrical, plumbing, mechanical, weather protection, approved material, maintenance, exit, and fire health and safety requirements. This incorporates the majority of the requirements in the California Building Standards Code.

Regarding height, the ordinance includes revisions to clarify and refine allowable limits in accordance with HCD guidance. Detached ADUs would continue to be limited to 20 feet in height, but could be approved up to 25 feet through a minor site development permit if they meet conditions related to consistency with the primary structure or local development standards. Attached ADUs are proposed to be permitted up to 25 feet or the maximum height allowed by the applicable zoning district, whichever is greater. This would not constitute a new entitlement, as the height limits for all applicable zoning districts already exceed 25 feet. The ordinance also proposes confirming that ADUs constructed above garages, whether attached or detached, may reach 25 feet or the zoning district's maximum height. Previous language clarified that ADUs may exceed the height of the primary residence.

For JADUs, the updates include proposed corrections to permit processing timelines, revised deed restriction language, and confirmation that separate utility impact fees would not apply when a JADU is constructed independently of a new single-family dwelling.

Pursuant to correspondence received on June 25, 2025 and guidance from the public and the California Department of Housing and Community Development (HCD), the proposed ordinance amending the Ukiah ADU regulations was revised in late-June to align with the requirements of Government Code Section 66323. This section governs specific categories of Accessory Dwelling Units (ADUs) that are exempt from certain local standards. Local agencies cannot apply development or design standards to 66323 Units unless those standards are specifically listed in Government Code section 66323. This includes both local rules and those from State ADU Law. That means local governments can't impose requirements like parking, building height, setbacks, lot size, open space, floor area ratio, or similar zoning rules, unless they're explicitly allowed under section 66323.

Environmental Review
The proposed ordinance is exempt from the California Environmental Quality Act (CEQA) pursuant to Section 15061(b)(3) of the CEQA Guidelines, also known as the “common sense” exemption. This exemption applies when it can be seen with certainty that the activity will not have a significant effect on the environment. The ordinance does not authorize new uses or physical development and does not expand the range of allowable land uses beyond what is already permitted under existing state law. Instead, it modifies and clarifies local permitting procedures to ensure consistency with state requirements. These changes include the expansion of ministerial approval processes, as well as technical corrections to align with the municipal code.

Staff recommends Council adopt the Ordinance amending the City's ADU and JADU regulations to ensure compliance with state law and the findings of the California Department of Housing & Community Development. If adopted, this ordinance will go into effect in 30 days.

Recommended Action: Adopt an ordinance amending the City’s Accessory Dwelling Unit and Junior Accessory Dwelling Unit Regulations to Ensure Compliance with State Law and the Findings of the California Department of Housing & Community Development.

BUDGET AMENDMENT REQUIRED: N/A

CURRENT BUDGET AMOUNT: N/A

PROPOSED BUDGET AMOUNT: N/A

FINANCING SOURCE: N/A

REVENUE: No GRANT: No

PREVIOUS CONTRACT/PURCHASE ORDER NO.: N/A

COORDINATED WITH: Darcy Vaughn, Assistant City Attorney

STRATEGIC PLAN (SP): **SP 3A** - Review and revise land use planning documents to be reflective of the long-term vision for the community.

CLIMATE INITIATIVES (CI): **5a** – Update zoning ordinance.

GENERAL PLAN ELEMENTS (GP):GP-A8 - Housing Element (2019-2027). H-3: Remove governmental constraints to infill housing development; H-3.1: Improve building and planning permit processing for residential construction; LU-1: H-3.1: Improve building and planning permit processing for residential construction.

Approved:
Sage Sangiacomo, City Manager

STATE OF CALIFORNIA - BUSINESS, CONSUMER SERVICES AND HOUSING AGENCY GAVIN NEWSOM, *Governor*

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
DIVISION OF HOUSING POLICY DEVELOPMENT
651 Bannon Street, 10th Floor
Sacramento, CA 95811
(916) 263-2911 / FAX (916) 263-7453
www.hcd.ca.gov

April 24, 2025

Craig Schlatter, AICP, Director
Community Development Department
City of Ukiah
300 Seminary Avenue
Ukiah, CA 95842

Dear Craig Schlatter:

RE: Review of City of Ukiah's Accessory Dwelling Unit (ADU) Ordinance under State ADU Law (Gov. Code, §§ 66310 - 66342)

Thank you for submitting the City of Ukiah's (City) ADU Ordinance No. 1244 (Ordinance), adopted September 4, 2024, to the California Department of Housing and Community Development (HCD). The Ordinance was received on September 5, 2024. HCD has reviewed the Ordinance and submits these written findings pursuant to Government Code section 66326, subdivision (a). HCD finds that the Ordinance fails to comply with State ADU Laws in the manner noted below. Pursuant to Government Code section 66326, subdivision (b)(1), the City has up to 30 days to respond to these findings. Accordingly, the City must provide a written response to these findings no later than May 24, 2025.

The Ordinance addresses many statutory requirements; however, HCD finds that the Ordinance does not comply with State ADU Law as follows:

1. *Senate Bill (SB) 1211 (Chapter 296, § 3, Statutes of 2024)* – As of January 1, 2025, the Legislature changed Government Code section 66323. Subdivision (a)(4)(A)(ii) and (iii), now allows for the following:
    - (ii) On a lot with an existing multifamily dwelling, not more than eight detached accessory dwelling units. However, the number of accessory dwelling units allowable pursuant to this clause shall not exceed the number of existing units on the lot.
    - (iii) On a lot with a proposed multifamily dwelling, not more than two detached accessory dwelling units.

    The Ordinance does not currently list any of this information. The City must add new language reflecting these allowable uses.
2. *Assembly Bill (AB) 2533 (Chapter 834, Statutes of 2024)* - As of January 1, 2025, there are changes to Government Code section 66332. Subdivisions (a) and (b) were changed and subdivisions (d) – (f) were added. Changes include permitting

previously unpermitted ADUs, adding the same protections for JADUs, and setting additional requirements for local agencies. The City should review these new requirements and adjust the Ordinance to comply with State ADU Law.

3. *Statutory Numbering* - The Ordinance contains several references to code sections that were deleted by SB 477, effective March 25, 2024. These include Government Code sections 65852.2, 65852.22 and 65852.26. The contents of these sections were relocated to Government Code, Title 7, Division 1, Chapter 13 (sections 66310-66342, see Enclosure). The City must amend the Ordinance to refer to the correct Government Code sections.

4. Section 9056.1 (E) – *Conversion ADUs* – The Ordinance states, "Accessory dwelling units may be attached to existing single-family or multiple-family residences or detached as separate structures." However, Government Code section 66314, subdivision (d)(3) states, "The accessory dwelling unit is either attached to, **or located within**, the proposed or existing primary dwelling, including attached garages, storage areas or similar uses, or **an accessory structure** or detached from the proposed or existing primary dwelling and located on the same lot as the proposed or existing primary dwelling, including detached garages" (emphasis added). The Ordinance does not mention the option of a conversion ADU, and that an ADU can be attached to an accessory structure. Therefore, the City must amend the Ordinance to clarify that an ADU may be formed by conversion or addition to an existing accessory structure.

5. Section 9056.2 (A) – *Review Process* - The Ordinance states, "Applications for a building permit for an ADU shall be deemed approved if the local agency has not **acted on** the completed application within 60 days" (emphasis added). However, State ADU Law requires: "The permitting agency shall either approve or deny the application to create or serve an accessory dwelling unit or a junior accessory dwelling unit within 60 days from the date the permitting agency receives a completed application if there is an existing single-family or multifamily dwelling on the lot."[1] The Ordinance uses the words "acted on", but State ADU Law requires the City to "approve or deny" the application. Therefore, City must amend the Ordinance to replace "acted on" with "approve or deny".

6. Section 9056.2 (B)(a) – *Conversions of Accessory Structures* – The Ordinance states, "An ADU may be attached to an existing primary residence converted from a portion of the existing living area of the primary residence, detached and on the same legal lot as a primary residence, converted from the entirety of or a portion of an existing accessory structure, or attached to an existing or proposed accessory structure". However, State ADU Law requires, "The accessory dwelling unit is either attached to, or located within, the proposed or existing primary dwelling, including attached garages, storage areas or similar uses, or an accessory structure or detached from the proposed or existing primary dwelling and located on the same lot as the proposed or existing primary

[1] Gov. Code, § 66317, subd. (a).

dwelling, including detached garages."[2]. The Ordinance does not make clear that an ADU may be converted from an attached garage. Therefore, the City must amend the Ordinance to allow attached garages to be converted to ADUs.

7. Section 9056.2 (B)(b) – *Unit Combinations* – The Ordinance states, "The number of ADUs allowed on a single lot shall be: (i). On a lot that contains an existing or proposed single-family dwelling: One (1) ADU attached or detached, (ii). On a lot that contains an existing multifamily dwelling: Two (2) ADUs, detached from the multifamily structure, and up to 25 percent of the number of units in the existing multifamily dwelling converted from existing non-livable space in a multifamily structure. (iii) On a lot that contains a proposed multifamily dwelling: Two (2) ADUs, detached from the multifamily structure."

   However, pursuant to Government Code section 66323, subdivision (a), "Notwithstanding Sections 66314 to 66322, inclusive, a local agency shall ministerially approve an application…to create any of the following: (A) One accessory dwelling unit and one junior accessory dwelling unit per lot with a proposed or existing single-family dwelling…(i) The accessory dwelling unit or junior accessory dwelling unit is within the proposed space of a single-family dwelling or existing space of a single-family dwelling or accessory structure." Additionally, subparagraph (B) permits "[o]ne detached, new construction, accessory dwelling unit that does not exceed four-foot side and rear yard setbacks." The use of the term "any" followed by a list of ADU types permitted under Government Code section 66323, indicate that any of these ADU types can be combined on lots with existing or proposed single-family dwellings. This permits a homeowner, who meets the specified requirements, to create one converted ADU; one detached, new construction ADU; and one JADU. ADU types can be combined on lots with existing or proposed single-family dwellings. Therefore, the City must amend the Ordinance to provide for all ADU combinations described in Government Code section 66323.

8. Section 9056.2 (C) – *Maximum Floor Area of Detached ADU* – The Ordinance states, "The maximum size of the detached ADU shall be one thousand and two hundred (1,200) square feet. The conversion of an existing accessory structure or a portion of the existing primary residence to an ADU is not subject to size requirements." However, Government Code, section 66323, subdivision (a)(4), requires the local agency to approve ADUs that are detached from the multifamily dwelling structure. Detached ADUs on multifamily lots do not have a floor area restriction under Government Code, section 66323, subdivision (a)(4). The City must remove this restriction from the Ordinance.

[2] Gov. Code, § 66314, subd. (d)(3).

9. Section 9056.2 (D) – *Off-site Improvements* – The Ordinance states, “Curb, gutter, sidewalk, paving and street trees, however, shall be required when that infrastructure does not exist, and the proposed building permit value is equal to or greater than one-third (1/3) of the value of the existing structure per UCC §9181”. However, Government Code, section 66315, states: “Section 66314 establishes the maximum standards that a local agency shall use to evaluate a proposed accessory dwelling unit on a lot that includes a proposed or existing single-family dwelling. No additional standards, other than those provided in Section 66314, shall be used, or imposed, including an owner-occupant requirement, except that a local agency may require that the property may be used for rentals of terms 30 days or longer.” Off-site improvements are an additional standard not authorized by State ADU Law. The City must remove these requirements from the Ordinance.

10. Section 9056.2 (G)(c) – *Fire Sprinklers* – The Ordinance states, “Fire sprinklers shall not be required in the ADU if the primary residence is not required to have fire sprinklers.” However, Government Code, section 66314, subdivision (d)(12) and section 66323, subdivision (c) state, “The construction of an accessory dwelling unit shall not trigger a requirement for fire sprinklers to be installed…” in the existing primary dwelling. Therefore, the City must amend the Ordinance to reflect that and ADU may not trigger a requirement that fire sprinklers be installed in the primary dwelling.

11. Section 9056.4 (D) – *Uncovered Parking* – The Ordinance states, “If a garage, carport, or covered parking structure is demolished in conjunction with the construction of an ADU or converted to an ADU, the City shall not require that those off-street parking spaces be replaced.” However, Government Code, section 66314, subdivision (d)(11), states that “A local agency may not require off-street parking spaces to be replaced when a garage, carport, covered parking structure, or *uncovered parking* space is demolished in conjunction with the construction of an ADU or converted to an ADU.” Therefore, the City must amend the Ordinance to include non-replacement of *uncovered parking* when uncovered *parking* is used to construct or is converted to an ADU.

12. Section 9056.6 (A) and (D) – *Height limits* –Section 9056.6 (D), states, “ADUs above a garage (Attached or Detached) can be constructed to the maximum height for the zoning district in which it is located.” However, Government Code, section 66321, subdivision (b)(4) states that height limitations must be prescribed no lower than 16, 18, 20 or 25 feet under certain specified conditions. The City must amend the Ordinance to reflect the various height limits provided in State ADU Law.

13. Section 9056.7 – *Development Standards* – The Ordinance states, "Whenever an ADU is proposed that would involve uses or features that are not explicitly addressed by design and development standards set forth in this Code or State law, the Community Development Director shall determine whether the proposal is appropriate and whether it should be reviewed on a ministerial or discretionary basis." However, Government Code section 66316, states, "An existing accessory dwelling unit ordinance governing the creation of an accessory dwelling unit by a local agency or an accessory dwelling ordinance adopted by a local agency shall provide an approval process that includes only ministerial provisions for the approval of accessory dwelling units and shall not include any discretionary processes, provisions, or requirements for those units, except as otherwise provided in this article." The City may apply additional processes with a compliant Ordinance to further the creation of ADUs that do not otherwise comply with the minimum standards necessary for ministerial review. These processes are intended to provide additional opportunities to create ADUs that would not otherwise be permitted, and a discretionary process may not be used to review ADUs that are fully compliant with State ADU Law. The City must amend the Ordinance to provide an approval process that includes only ministerial provisions for the approval of ADUs.

14. Section 9056.7 – *Development Standards* – Paragraphs (A), (B), (C), and (E), of section 9056.7 impose additional subjective development standards on ADUs which are not authorized by State ADU Law. State ADU Law requires that local agencies review ADUs ministerially without discretionary review and impose only objective standards on ADUs under the provisions of Government Code, section 66414, subdivision (b)(1). Objective standards are defined as "Standards that involve no personal or subjective judgment by a public official and are uniformly verifiable by reference to an external and uniform benchmark or criterion available and knowable by both the development applicant or proponent and the public official prior to submittal."[3] The City must amend the Ordinance to remove subjective development standards.

15. Section 9057.1 – *JADU* –The Ordinance states, "The department shall **act on** an application to create a JADU within sixty (60) days from the date it receives a completed application if there is an existing single-family dwelling in the lot" (emphasis added). However, Government Code section 66335, subdivision (a)(2), states "[t]he permitting agency shall either approve or deny the application to create or serve a junior accessory dwelling unit within 60 days from the date the permitting agency receives a completed application…" The term "act upon" is old language and was amended to read "approve or deny." Acting on an application does not reflect State ADU Law. The City is required to issue an approval, or a denial with a full set of comments on how to remedy the application within 60 days of receiving a completed application. Therefore, the

[3] Gov. Code, § 66313, subd. (h).

City must amend this section to reflect an application must be approved or denied vs acted upon.

16. Section 9057.1 (A) – *Permit and Fees* – The Ordinance states, "Construction permits (including, but not limited to a building, well, septic, and/or sewer permit) shall be required to establish a JADU." However, JADUs shall not be considered by a local agency, special district, or water corporation to be a new residential use for purposes of calculating connection fees or capacity charges for utilities, unless constructed concurrently with a new single-family dwelling.[4] The City must amend the Ordinance to remove the additional utility fees for junior accessory dwelling units (JADUs) unless it is constructed concurrently with a new single-family dwelling.

17. Section 9057.1 (D)(4)(i) – *Deed Restriction Typo* – The Ordinance states that "The property owner shall record a deed restriction that: (i) A prohibition on the sale of the junior accessory unit separate from the sale of the single-family residence, including a statement that the deed restriction may be enforced against future purchasers; and." That change would break the grammar for (ii), (iii), and (iv). Instead, the City should amend the Ordinance to correct the typing error and write "Includes a prohibition" under (i) instead of "A prohibition."

18. Section 10.1 – *Severability* – The Ordinance states, "If any section, subsection, subdivision, paragraph, sentence, clause, or phrase of this Ordinance, or its application to any person or circumstance, is for any reason held to be invalid or unenforceable, such invalidity or unenforceability shall not affect the validity or enforceability of the remaining sections, subsections, subdivisions, paragraphs, sentences, clauses or phrases of this Ordinance, or its application to any other person or circumstance. The City Council of the City of Ukiah hereby declares that it would have adopted each section, subsection, subdivision, paragraph, sentence, clause, or phrase hereof irrespective of the fact that any one or more other sections, subsections, subdivisions, paragraphs, sentences clauses or phrases hereof be declared invalid or unenforceable." However, Government Code section, 66316 states, "If a local agency has an existing accessory dwelling unit ordinance that fails to meet the requirements of this article, that ordinance shall be null and void and that agency shall thereafter apply the standards established in this article for the approval of accessory dwelling units, unless and until the agency adopts an ordinance that complies with this article." The *Severability* clause implies that some parts of the Ordinance will be valid even if other parts are not valid. The City must remove the Severability clause and apply the standards under Government Code section 66316 when the existing accessory dwelling unit ordinance that fails to meet the requirements of this article.

[4] Gov. Code, § 66324, subd. (b).

The City has two options in response to this letter.[5] The City can either amend the Ordinance to comply with State ADU Law[6], or adopt the Ordinance without changes and include findings in its resolution adopting the Ordinance that explain the reasons the City believes that the Ordinance complies with State ADU Law despite HCD's findings.[7] If the City fails to take either course of action and bring the Ordinance into compliance with State ADU Law, HCD must notify the City and may notify the California Office of the Attorney General that the City is in violation of State ADU Law.[8]

HCD appreciates the City's efforts in the preparation and adoption of the Ordinance and welcomes the opportunity to assist the City in fully complying with State ADU Law. Please feel free to contact Reshma Sen at Reshma.Sen@hcd.ca.gov if you have any questions.

Sincerely,

Jamie Candelaria

Jamie Candelaria
Senior Housing Accountability Manager
Housing Policy Development Division

[5] Gov. Code, § 66326, subd. (c)(1).
[6] Gov. Code, § 66326, subd. (b)(2)(A).
[7] Gov. Code, § 66326, subd. (b)(2)(B).
[8] Gov. Code, § 66326, subd. (c)(1).

State ADU/JADU Law Statutory Conversion Table

New Government Code Sections	Previous Government Code Sections
Article 1. General Provisions	
66310	65852.150 (a)
66311	65852.150 (b)
66312	65852.150 (c)
66313	General Definition Section 65852.2 (j) 65852.22 (j)
Article 2. Accessory Dwelling Unit Approvals	
66314	65852.2(a)(1)(A), (D)(i)-(xii), (a)(4)-(5)
66315	65852.2 (a)(8)
66316	65852.2 (a)(6)
66317	65852.2 (a)(3), (a)(7)
66318	65852.2 (a)(9), 65852.2 (a)(2)
66319	65852.2 (a)(10)
66320	65852.2 (b)
66321	65852.2 (c)
66322	65852.2 (d)
66323	65852.2 (e)
66324	65852.2 (f)
66325	65852.2 (g)
66326	65852.2 (h)
66327	65852.2 (i)
66328	65852.2 (k)
66329	65852.2 (l)
66330	65852.2 (m)
66331	65852.2 (n)
66332	65852.23.
Article 3. Junior Accessory Dwelling Units	
66333	65852.22 (a)
66334	65852.22 (b)
66335	65852.22 (c)
66336	65852.22 (d)
66337	65852.22 (e)
66338	65852.22 (f)-(g)
66339	65852.22 (h)
Article 4. Accessory Dwelling Unit Sales	
66340	65852.26 (b)
66341	65852.26 (a)
66342	65852.2 (a)(10)

City of Ukiah

COMMUNITY DEVELOPMENT DEPARTMENT

May 23, 2025

Jamie Candelaria, Senior Housing Accountability Manager
Department of Housing and Community Development
Housing Policy Development Division
651 Bannon Street, 10th Floor
Sacramento, CA 95811

Subject: Response to HCD Findings Regarding ADU Ordinance No. 1244 under State ADU Law (Gov. Code, §§ 66310 - 66342)

Dear Ms. Candelaria,

Thank you for HCD's review of the City of Ukiah's Accessory Dwelling Unit (ADU) Ordinance No. 1244, as outlined in the letter dated April 24, 2025. The City of Ukiah appreciates the opportunity for HCD staff, particularly Reshma Sen, HCD Representative II, to collaborate with the City of Ukiah over the past few weeks.

As a designated Pro-Housing City, Ukiah is proud to be on track to meet its 6th Cycle Regional Housing Needs Allocation (RHNA) and continues to implement policies that expand affordable and market-rate housing opportunities and remain committed to aligning our local ordinances with State housing law.

The following is the City's formal response to the 18 findings raised in HCD's letter (enclosed). All identified changes will be incorporated into a revised ordinance, which will be noticed and scheduled for a public hearing before the Planning Commission on June 26, 2025, followed by introduction to, and possible adoption by, the City Council in July:

1. **Senate Bill 1211**: As required by SB 1211, language will be integrated to allow up to 8 detached ADUs on lots with existing multifamily dwellings (not to exceed the existing unit count), and up to 2 detached ADUs on lots with proposed multifamily dwellings.
2. **Assembly Bill 2533**: The ordinance will be revised to include provisions of AB 2533 allowing recognition and regulation of previously unpermitted ADUs and extending protections to JADUs.
3. **Statutory Numbering**: Outdated citations (e.g., §65852.2) were initially flagged for replacement; however, per subsequent correspondence from Reshma Sen the reference to statutory numbering was sent in error. Therefore, no change is required regarding code citations based on that item.
4. **Converted ADUs**: The City will revise §9056.1(E) to explicitly state that ADUs may be created by converting or adding to existing accessory structures (including garages), consistent with §66314(d)(3).
5. **ADU Application Review Language**: The phrase "acted on" will be replaced with "approve or deny" to comply with current State ADU Law.

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6. **Attached Garage Conversions**: The ordinance will be amended to clarify that attached garages may be converted to ADUs. Notably, since 2017, attached garage conversions have comprised a significant share of the ADU permits issued in Ukiah.
7. **ADU Combinations**: The City will amend the ordinance to provide for all ADU combinations described in Government Code §66323.
8. **Size Limits for Multifamily ADUs**: Size limits will be removed for detached ADUs on lots with a multifamily dwelling structure, as requested by HCD staff.
9. **Off-Site Improvement Requirements**: All off-site improvement mandates (e.g., sidewalks, street trees) will be removed in accordance with §66315. Staff recognizes that these improvements are an additional standard not authorized by State ADU Law.
10. **Fire Sprinklers**: The ordinance will clarify that ADUs do not trigger fire sprinkler installation requirements in the primary dwelling, pursuant to §§66314(d)(12) and 66323(c). This codifies the City of Ukiah's existing practice that the construction of an accessory dwelling unit shall not trigger a requirement for fire sprinklers to be installed in the existing primary dwelling.
11. **Uncovered Parking Replacement**: Language will be added to confirm that uncovered parking spaces demolished or converted for ADU construction are not required to be replaced.
12. **Height Standards**: Height provisions will be updated to reflect a 25-foot standard for all detached ADUs.
13. **Section 9056.7 – Development Standards**: §9056.7(A), (B), (C), and (E) will be removed to ensure compliance with §66314(b)(1).
14. **Section 9056.7 – Development Standards**: §9056.7(A), (B), (C), and (E) will be removed to ensure compliance with §66314(b)(1).
15. **JADU Application Review Language**: The phrase "acted on" will be replaced with "approve or deny" to comply with current State ADU Law.
16. **JADU Utility Fees**: It is understood that JADUs are not considered a new residential use for purposes of calculating connection fees or permit for water or sewer. The ordinance will be clarified to reflect this limitation.
17. **Deed Restriction Typo**: The ordinance will correct the grammatical issue in §9057.1(D)(4)(i) by replacing "A prohibition" with "Includes a prohibition."
18. **Severability Clause**: The severability clause will be removed to comply with §66316, which requires that non-compliant ordinances be deemed null and void.

The City of Ukiah remains committed to supporting Accessory Dwelling Units (ADUs) as a key component of its housing strategy. During this 6th Cycle, over 35 new or converted ADU permits have been issued, reflecting strong and sustained local interest in this form of incremental housing. In 2020, the City developed three sets of engineered ADU building plans and made them available to the community at no cost. Each design has now been successfully utilized multiple times. These tools, along with ongoing day-to-day support and interactions continue to lower barriers for residents interested in building ADUs here.

Moving forward, Staff will ensure full compliance and submit materials for timely review by HCD staff as updates become available. We request prompt feedback from HCD so that staff can incorporate any input for discussion or response by the City Council.

City of Ukiah

COMMUNITY DEVELOPMENT DEPARTMENT

Overall, the City's response and these updates are aimed at ensuring full alignment with State ADU Law and reinforcing Ukiah's commitment to increasing housing production through clear, objective, and legally compliant regulations. We welcome continued collaboration with HCD and look forward to working together to provide our experience and advance shared housing objectives across California.

Sincerely,

Craig Schlatter, AICP
Community Development Director

Enclosures (1)

CC: Sage Sangiacomo, ICMA-CM, City Manager
David Rapport, City Attorney
Darcy Vaughn, Assistant City Attorney
Jesse Davis, AICP, Chief Planning Manager
Jim Robbins, Housing and Grants Manager

PLANNING COMMISSION RESOLUTION NO. 2025-02

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF UKIAH RECOMMENDING CITY COUNCIL ADOPTION OF AN ORDINANCE AMENDING THE UKIAH CITY CODE REGARDING ACCESSORY DWELLING UNITS (ADUs) AND JUNIOR ACCESSORY DWELLING UNITS (JADUs), IN COMPLIANCE WITH STATE LAW (GOVERNMENT CODE §§ 66310 – 66342)

WHEREAS, on December 7, 2022, the Ukiah City Council adopted Resolution No. 2022-79 certifying the Environmental Impact Report for the Ukiah 2040 General Plan (State Clearinghouse No. 2022050556), which analyzed the environmental impacts of the City's General Plan and included adoption of a Mitigation Monitoring and Reporting Program and Statement of Overriding Considerations; and

WHEREAS, pursuant to Government Code Section 65850, the City is authorized to adopt zoning regulations, including regulations governing accessory dwelling units and junior accessory dwelling units, consistent with the General Plan; and

WHEREAS, the City of Ukiah adopted ADU Ordinance No. 1244 on September 4, 2024, regulating the construction and development of accessory dwelling units (ADUs) and junior accessory dwelling units (JADUs) within the city; and

WHEREAS, the California Department of Housing and Community Development (HCD), in its letter dated April 24, 2025, issued formal findings pursuant to Government Code § 66326(a), determining that Ukiah's Ordinance No. 1244 did not fully comply with State ADU Law (Government Code §§ 66310 – 66342); and

WHEREAS, the City of Ukiah timely responded to HCD's letter on May 23, 2025, confirming its intent to amend Ordinance No. 1244 to fully align with updated ADU laws, including recent changes under SB 1211, AB 2533, and other applicable legislation; and

WHEREAS, on June 3, 2025, HCD confirmed the City's response was substantially compliant and instructed the City to proceed with formal adoption of the revised Ordinance and submit the adopted version to HCD; and

WHEREAS, the proposed Ordinance amendments are consistent with the goals and policies of the Ukiah General Plan and 6th Cycle Housing Element, and reflect the City's designation as a Pro-Housing community actively working to address its Regional Housing Needs Allocation (RHNA); and

WHEREAS, on June 23, 2025, the City of Ukiah received informal comments from the California Department of Housing and Community Development (HCD) and subsequently incorporated revisions to the proposed ordinance to ensure compliance with State law, including but not limited to Government Code section 66323, subdivision (a), and other applicable provisions. On June 25, 2025, the Planning Commission continued to a certain date, July 9, 2025, at which time the Planning Commission held a duly noticed public hearing to consider the ordinance, receive the staff report, as well as public comments from interested parties, and after closing the public comments portion discussed the matter; and

WHEREAS, the proposed Ordinance amendments align with the requirements of State law, including recent statutory amendments; promote housing development through clear, objective, and ministerial review processes; are necessary to maintain the validity of the City's ADU

Ordinance and Housing Element certification; reflect HCD-reviewed best practices in regulating ADUs and JADUs; and will benefit Ukiah residents by facilitating a wider range of housing options while minimizing potential impacts on existing neighborhoods;

WHEREAS, the Planning Commission has reviewed the ordinance, considered all written and oral testimony, and finds that the ordinance is in the public interest, supports streamlined permitting for compatible uses, and is consistent with the General Plan and applicable state law.

WHEREAS, the Planning Commission has reviewed the ordinance, considered all written and oral testimony, and finds that the ordinance is in the public interest, supports streamlined permitting for compatible uses, and is consistent with the General Plan and applicable state law.

WHEREAS, the Planning Commission has been advised of the guidance from the California Department of Housing and Community Development (HCD), which clarifies that maintaining a non-compliant ordinance while intending to follow State Accessory Dwelling Unit (ADU) Law does not satisfy Government Code section 66326(b), and that the appropriate action is to repeal the existing ordinance pursuant to Government Code section 66326(b)(2) to ensure legal clarity and compliance.

NOW, THEREFORE, BE IT RESOLVED that the City of Ukiah Planning Commission, based upon evidence in the record and oral and written testimony presented at public hearings, and all information contained in the record of proceedings related to the Accessory Dwelling Unit Ordinance, makes the following findings and recommendations:

1. The above recitals are true and correct and incorporated herein by this reference.

2. The proposed amendments to the Accessory Dwelling Unit Ordinance are consistent with the City of Ukiah 2040 General Plan and implement the goals, objectives, and policies of the certified 6th Cycle Housing Element. In accordance with Government Code Section 65860, the zoning amendments remain compatible with the objectives, policies, and land use designations of the General Plan.

3. The proposed ordinance amendments have been reviewed for compliance with the California Environmental Quality Act (CEQA) and are exempt from environmental review pursuant to CEQA Guidelines Section 15061(b)(3), the "common sense exemption," as it can be seen with certainty that there is no possibility the adoption of the ordinance will have a significant effect on the environment.

4. That the City Council adopt an ordinance amending Ukiah City Code Chapter 2 of Division 9, as shown in the attached Exhibit A, to ensure consistency with current State ADU Law and address the findings issued by the California Department of Housing and Community Development (HCD).

BE IT FURTHER RESOLVED that the Planning Commission designates the City Clerk as the custodian of the document and other materials that constitute the record of proceedings upon which the Planning Commission decision herein is based. These documents may be found at the office of the City of Ukiah Department of Community Development, 300 Seminary Avenue, Ukiah, CA 95482.

PASSED AND ADOPTED by the Planning Commission of the City of Ukiah this 9th day of July 2025, by the following roll call vote:

AYES: Planning Commissioners Johnson, Hilliker, and Chair de Grassi
NOES: None
ABSENT: None
ABSTAIN: None

Craig Schlatter, AICP
Community Development Director

Alex De Grassi, Chair
City of Ukiah Planning Commission

ATTEST:

Kristine Lawler, City Clerk
City Clerk

Exhibit A: Revised Draft Ordinance (06.30.2025)

ORDINANCE NO.

ORDINANCE OF THE CITY COUNCIL OF THE CITY OF UKIAH AMENDING VARIOUS SECTIONS OF THE UKIAH CITY CODE REGULATING ACCESSORY DWELLING UNITS AND JUNIOR ACCESSORY DWELLING UNITS

The City Council of the City of Ukiah hereby ordains as follows:

SECTION ONE. FINDINGS AND DECLARATIONS

1. The proposed amendments to Division 9, Chapter 2 of the Ukiah City Code are consistent with the 2040 Ukiah General Plan and support the goals, objectives, and policies outlined in the 6th Cycle Housing Element. The amendments are specifically designed to conform local zoning standards with state housing laws to meet the statutory requirements and policy expectations of the California Department of Housing and Community Development (HCD), thereby supporting the City's obligation to facilitate housing production and maintain certification of its 6th Cycle Housing Element.

2. The adoption of this Ordinance is a necessary action to continue progress towards production of affordable housing in a way that minimizes impacts to local neighborhoods.

3. When the State revises ADU law, a local jurisdiction's ADU Ordinance, if non-compliant with the new ADU laws, is rendered "null and void" and local jurisdictions must continue to process ADU applications through a ministerial process in accordance with State law.

4. On April 24, 2025, the California Department of Housing and Community Development (HCD) completed its review of the City of Ukiah's ADU Ordinance No. 1244, which was adopted on September 4, 2024 and submitted to HCD on September 5, 2024. Per Government Code § 66326(b)(1), the City responded on May 23, 2025 (within 30 days of receipt of HCD's findings). On June 3, 2025, HCD responded that they found the City's response substantially compliant with State ADU Law. Once amended, the City is instructed to upload the adopted Ordinance to HCD.

5. On June 23, 2025, the City of Ukiah received informal comments from the California Department of Housing and Community Development (HCD) and subsequently incorporated revisions to the proposed ordinance to ensure compliance with State law, including but not limited to Government Code section 66323, subdivision (a), and other applicable provisions.

~~5.~~6. On June 25, 2025, the Planning Commission continued to a certain date, July 9, 2025, at which time the Planning Commission held a duly noticed public hearing to consider the ordinance, receive the staff report, as well as public comments from interested parties, and after closing the public comments portion discussed the matter.

~~6.~~7. Through adoption of this ADU Ordinance, the City has responded to HCD's findings and intends to bring the City's ADU Ordinance into compliance with applicable State ADU laws.

SECTION TWO.

Division 9, Chapter 2, Article 5.3 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§9056 PURPOSE AND INTENT

The purpose of this article is to create an expedient ministerial approval process for residential accessory

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dwelling units (ADUs). To do so, this article sets forth development standards in conformance with the California Government Code and tailored to meet the changing needs of Ukiah communities and expand housing choices in all neighborhoods.

§9056.1 GENERAL REQUIREMENTS

Accessory dwelling units (ADU) on lots developed with a primary single-family or multifamily residence or for which a primary residence is proposed shall be ministerially permitted and subject to the following standards/criteria:

A. The requirements of this article are applicable to all existing ADUs, as well as those proposed after the effective date hereof, except for legal nonconforming units, or as specifically provided herein. Existing ADUs as of the date hereof inconsistent with the provisions listed herein shall be considered legal nonconforming; provided, that they were legal at the time of their creation.

B. ADUs shall be deemed not to exceed the allowable density for the residential lot upon which an ADU is located. ADUs are deemed a residential use that is consistent with the existing general plan and zoning designation for the lot on which an ADU is located with a primary residence.

C. These regulations do not allow the division of property upon which an accessory dwelling unit is located unless all requirements of the applicable zoning district or State law are met.

D. An ADU may be rented separate from the primary residence but may not be sold or otherwise conveyed separate from the primary residence unless the conveyance meets the requirements of Government Code sections 66340 through 66342.

E. Accessory dwelling units provide complete independent living facilities for one or more persons The accessory dwelling unit is either attached to, or located within, the proposed or existing primary dwelling, including attached garages, storage areas or similar uses, or an accessory structure or detached from the proposed or existing primary dwelling and located on the same lot as the proposed or existing primary dwelling, including detached garages.

F. An ADU must meet all applicable building and fire codes, and shall have electric, water and sewer or septic service with the type of meter arrangement at the property owner's option. Water, sewer, and electrical services shall be available prior to the issuance of a building permit for an ADU. No new water or sewer connection fees may be required for ADUs that are contained within the existing space of a single-family or multifamily residence or accessory structure, unless the ADU is constructed with a new single-family home. Any impact fees charged for an accessory dwelling unit of seven hundred fifty (750) square feet or more shall be charged proportionately in relation to the square footage of the primary dwelling unit.

G. Nothing in this chapter shall preclude the development of a junior accessory dwelling unit as regulated by Ukiah City Code and Government Code sections 66333 through 66339.

§9056.2 DEVELOPMENT REQUIREMENTS

A. Applications for a building permit for an ADU shall be deemed approved if the local agency has not approved or denied the completed application within sixty (60) days. If approved, no additional parking or other development standards shall be applied except for building code and fire safety requirements.

B. Applications for a building permit within any zoning district where residential uses are allowed or permitted shall be approved ministerially to develop any of the following:

1. Unit Type: An ADU may be attached to an existing primary residence converted from a portion of the existing living area of the primary residence or attached garage, detached and on the same legal lot as a primary residence, converted from the entirety of or a portion of an existing accessory structure, or attached to an existing or proposed accessory structure.

2. Number of Units: The number of ADUs allowed on a single lot shall be:

    a) On a lot that contains an existing or proposed single-family dwelling: One (1) new ADU attached or detached. Additionally, one (1) converted ADU created from existing space of the single-family residence or an existing accessory structure. Converted ADUs must have exterior access. ADUs converted from existing structures are eligible for a 150 square-foot expansion to accommodate ingress and egress.

    b) On a lot that contains an existing multifamily dwelling: Eight (8) ADUs, detached from the multifamily structure, and up to twenty-five percent (25%) of the number of units in the existing multifamily dwelling converted from existing non-livable space in a multifamily structure. The number of Accessory Dwelling Units, however, allowable pursuant to this Subsection shall not exceed the number of existing units on the lot.

    c) On a lot that contains a proposed multifamily dwelling: Two (2) ADUs, detached from the multifamily structure.

C. Size: The maximum size of a detached ADU shall be one thousand two hundred (1,200) square feet, unless located on the same parcel as a multi-family structure, in which case there shall be no maximum unit size. The conversion of an existing accessory structure or a portion of the existing primary residence to an ADU is not subject to unit size requirements.

D. Improvements: The City shall not require, as a condition for ministerial approval of a permit application for the creation of an ADU, the correction of nonconforming zoning conditions. For purposes of this section, "nonconforming zoning condition" means a physical improvement on a property that does not conform with current zoning standards.

E. Lot Size: No minimum lot size shall be required.

F. Lot Coverage: The lot coverage limitation of the base zoning district shall not apply to the construction of an ADU.

G. Construction Standards: Not exclusive of other applicable State and local building and fire regulations, ADUs shall comply with the following requirements:

1. Structures within the State responsibility area (SRA) must comply with applicable local and state regulations for setbacks and fire-resistive construction.
2. Structures outside of the SRA must comply with building code regulations for fire-resistive construction, unless more restrictive standards are required pursuant to State law or regulation.
3. Fire sprinklers are not required for the ADU if not required for the primary residence, and the construction of an ADU may not trigger the requirement for fire sprinklers in an existing primary dwelling.

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§9056.3 SETBACKS

The following yard setback requirements shall apply to ADUs:

A. Front Yard: The same as the existing primary residence, but no closer than five feet (5') for the construction of a new detached ADU greater than 800 square feet.

1. For construction of a detached ADU, the application of front yard setbacks do not apply to an ADU of eight hundred (800) square feet or less when associated with a Single-Family Dwelling unit.

~~1.~~2. For construction of a detached ADU, the application of front yard setbacks does not apply to construction an ADU when associated with a Multiple-Family Dwelling.

~~A.~~B. Side Yard or Rear Yard: Four feet (4').

~~B.~~C. No setback shall be required for an existing living area, garage, or accessory structure or a structure constructed in the same location and to the same dimensions as an existing structure that is converted to an ADU or to a portion of an ADU.

~~C.~~D. ~~The application of front yard setbacks cannot preclude an ADU of eight hundred (800) square feet or less.~~An ADU created within the existing space of an accessory structure can be expanded beyond the physical dimensions of the structure up to 150 square feet solely for the purpose of accommodating ingress and egress. The resulting ADU shall conform only to setbacks sufficient for fire and safety

§9056.4 PARKING

1. Parking requirements for the ADU shall be one off-street space (independently accessible or tandem) in addition to the accessible parking spaces required for the existing single-family or multifamily residence. If the primary residence was legally constructed at a time when on-site parking was not required, then only the parking space(s) for the ADU shall be required.

2. Off-street parking shall be permitted in setback areas in compliance with the definition of "off-street parking" found in section 9278B of this code or through tandem parking.

3. Parking standards will not be imposed for an ADU in any of the following instances:

    1. The ADU is located within one-half (1/2) mile of a public transit stop;

    2. The ADU is located within an architecturally and historically significant district;

    3. The ADU is part of the existing primary residence or an existing accessory structure;

    4. When on-street parking permits are required but not offered to the occupant of the ADU;

    5. When there is a car share vehicle located within one block of the ADU;

    6. When an application for an ADU is submitted with an application to create a new single-family or multifamily dwelling on the same lot.

4. If a garage (attached or detached), carport, or uncovered or covered parking structure is demolished in conjunction with the construction of an ADU or converted to an ADU, the City shall

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not require that those off-street parking spaces be replaced.

5. No parking shall be required for ADUs created pursuant to Government Code § 66323, including:

    1. Converted ADUs in existing single-family homes or accessory structures;

    2. New detached ADUs (≤ 800 square feet);

    3. ADUs converted from non-livable space in multifamily buildings (up to 25% of units);

    4. Detached ADUs on lots with multifamily structures.

§9056.5 LEGAL NONCONFORMING ACCESSORY STRUCTURES

ADUs converted from residential accessory structures determined to be legal nonconforming shall be subject to the following requirements:

A. A legal nonconforming residential accessory structure that is converted to an ADU, or reconstructed as an ADU to the same footprint and dimensions as the original structure, shall not be subject to setback requirements.

B. A legal nonconforming residential accessory structure that is converted to an ADU may be expanded up to one thousand two hundred (1,200) square feet if the expansion will comply with the height limit and setbacks for new detached ADUs.

C. Expansion of floor area within a nonconforming setback is limited to one hundred fifty (150) square feet, if necessary, to accommodate associated utilities, ingress and egress.

D. Delay of Enforcement of Building Standards.

    1. The owner of an Accessory Dwelling Unit that was built before January 1, 2020, may submit an application to the Building Official ~~requesting that~~requesting correction of any violation of building standards. For purposes of this Section, "building standards" refers to those standards enforced by permitting agencies under the authority of Section 17960 of the California Health and Safety Code.

    2. The Building Official shall grant the application if determined that enforcement of the building standard is not necessary to protect health and safety. In making this determination, the Building Official shall consult with the Fire Official.

    3. Any notice to correct a violation of a building standard that is issued to the owner of an Accessory Dwelling Unit built before January 1, 2020, shall include a statement that the owner has a right to request a delay in enforcement of the building standard for an Accessory Dwelling Unit pursuant to this Section.

    4. The City shall not impose impact fees or connection or capacity charges for ADUs ~~or JADUs~~ legalized under this Section.

§9056.6 HEIGHT

A. The maximum height for detached ADUs shall be twenty feet (20').

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B. ADUs attached to the primary structure can be constructed to a height of twenty-five feet (25') or the maximum height for the zoning district in which the unit is located.

C. ADUs may be taller than the primary residential structure.

D. ADUs above a garage (attached or detached) can be constructed to the maximum height for the zoning district in which the unit is located, or twenty-five feet (25'), whichever is greater.

E. Detached ADUs greater than twenty feet (20') in height may be approved through the granting of a minor site development permit.

SECTION THREE.

Division 9, Chapter 2, Article 5.4 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§9057 PURPOSE AND INTENT

The purpose of this article is to implement the requirements of the Government Code and provisions of the General Plan Housing Element that encourage the production of affordable housing by expanding housing opportunities for all economic segments of the community.

§9057.1 GENERAL REQUIREMENTS

Junior accessory dwelling units (JADUs) shall be ministerially permitted in zoning districts that allow single-family dwelling units as permitted uses, in compliance with Government Code sections 66333 through 66339, the requirements of this section, and all other requirements of the applicable zoning district. The Department shall approve or deny an application to create a JADU within sixty (60) days from the date it receives a completed application if there is an existing single-family dwelling on the lot. For the purposes of constructing a JADU, attached garages are part of a single-family dwelling.

A. Permit Requirements and Fees: Construction permits (including, but not limited to, a building, electrical, or mechanical permit) shall be required to establish a JADU. A JADU shall not be considered a separate or new dwelling unit for purposes of applying building codes, fire codes, well and septic requirements, or collection of impact fees.

B. Timing: A JADU may be established after or concurrently with the single-family residence.

C. Development Standards:

1. Number of Units: One JADU is allowed per lot, within a single-family residence.

2. Unit Size: The floor area of a JADU shall not exceed five hundred (500) square feet. If the bathroom is shared with the single-family residence, it shall not be included in the floor area.

3. Location: A JADU shall be created from space in an existing, fully permitted, or proposed single-family dwelling or garage attached to the single-family residence.

4. Access: A separate, exterior entrance to the JADU shall be provided.

5. Bathroom: If a permitted junior accessory dwelling unit does not include a separate bathroom, the permitted junior accessory dwelling unit shall include a separate entrance from the main entrance to the structure, with an interior entry to the main

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living area.

6. Kitchen: A JADU shall include an efficiency kitchen. The efficiency kitchen must be removed when the JADU use ceases.

7. The owner of a Junior Accessory Dwelling Unit that was built before January 1, 2020, may submit an application to the Building Official requesting that correction of any violation of building standards be delayed for five years. For purposes of this Section, "building standards" refers to those standards enforced by permitting agencies under the authority of Section 17960 of the California Health and Safety Code.

    a. The Building Official shall grant the application if the Building Official determines that enforcement of the building standard is not necessary to protect health and safety. In making this determination, the Building Official shall consult with the Fire Marshal.
    b. Any notice to correct a violation of a building standard that is issued to the owner of a Junior Accessory Dwelling Unit built before January 1, 2020, shall include a statement that the owner has a right to request a delay in enforcement of the building standard for a Junior Accessory Dwelling Unit pursuant to this Section.
    ~~b.~~ c. The City shall not impose impact fees or connection or capacity charges for JADUs legalized under this Section.

D. Use Restrictions

1. JADUs may be rented but shall not be sold separate from the single-family residence.

2. JADUs may not be rented for periods of less than thirty (30) days.

3. The owner of the property must reside in either the single-family home or the newly created JADU. Owner-occupancy shall not be required if the owner is another governmental agency, land trust, or housing organization.

4. Deed Restriction: The property owner shall record a deed restriction that:
    a) Includes a prohibition on the sale of the junior accessory dwelling unit separate from the sale of the single-family residence, including a statement that the deed restriction may be enforced against future purchasers; and
    b) Specifies that the deed restriction runs with the land and is enforceable against future property owners; and
    c) Restricts the size and attributes of the JADU to those established by this section and Government Code section 66333; and
    d) Makes the City of Ukiah a third-party beneficiary of the deed restriction with the right to enforce the provisions of the deed restriction.

SECTION FOUR.

1. PUBLICATION: Within fifteen (15) days after its adoption, this Ordinance shall be published once in a newspaper of general circulation in the City of Ukiah. In lieu of publishing the full text of the Ordinance, the City may publish a summary of the Ordinance once 5 days prior to its adoption and again within fifteen (15) days after its adoption.

2. EFFECTIVE DATE: The ordinance shall become effective thirty (30) days after its adoption.

3. SEVERABILITY: Pursuant to Government Code section 66316, if any part of this ordinance is

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determined to be inconsistent with the requirements of state law governing accessory dwelling units or junior accessory dwelling units, the ordinance shall be deemed null and void. In such an event, the City shall apply the standards established in state law for the approval of accessory dwelling units, unless a revised ordinance that complies with state law is duly adopted.

4. ENVIRONMENTAL REVIEW: The ordinance regulates the construction and development of accessory dwelling units, which are either additions to existing structures or new small structures, both of which are categorically and statutorily exempt under CEQA. The City Council, exercising its independent judgment, finds that the adoption of this ordinance is exempt from the California Environmental Quality Act (CEQA) pursuant to the State CEQA Guidelines (Title 14, California Code of Regulations, Chapter 3, beginning at Section 15000). Because the proposed ordinance will not result in a direct or reasonably foreseeable indirect physical change in the environment, it is also exempt under Section 15061(b)(3), the "common sense" exemption, as it can be seen with certainty that there is no possibility the ordinance may have a significant effect on the environment

Introduced by title only on , 2025, by the following roll call vote: AYES:

NOES:
ABSENT:
ABSTAIN:

Adopted on , 2025, by the following roll call vote: AYES:

NOES:
ABSENT:
ABSTAIN:

DRAFT

Douglas F. Crane, Mayor

ATTEST:

Kristine Lawler, CMC/City Clerk

ORDINANCE NO. 2025-

ORDINANCE OF THE CITY COUNCIL OF THE CITY OF UKIAH AMENDING VARIOUS SECTIONS OF THE UKIAH CITY CODE REGULATING ACCESSORY DWELLING UNITS AND JUNIOR ACCESSORY DWELLING UNITS

The City Council of the City of Ukiah hereby ordains as follows:

SECTION ONE. FINDINGS AND DECLARATIONS

1. The proposed amendments to Division 9, Chapter 2 of the Ukiah City Code are consistent with the 2040 Ukiah General Plan and support the goals, objectives, and policies outlined in the 6th Cycle Housing Element. The amendments are specifically designed to conform local zoning standards with state housing laws to meet the statutory requirements and policy expectations of the California Department of Housing and Community Development (HCD), thereby supporting the City's obligation to facilitate housing production and maintain certification of its 6th Cycle Housing Element.

2. The adoption of this Ordinance is a necessary action to continue progress towards production of affordable housing in a way that minimizes impacts to local neighborhoods.

3. When the State revises ADU law, a local jurisdiction's ADU Ordinance, if non-compliant with the new ADU laws, is rendered "null and void" and local jurisdictions must continue to process ADU applications through a ministerial process in accordance with State law.

4. On April 24, 2025, the California Department of Housing and Community Development (HCD) completed its review of the City of Ukiah's ADU Ordinance No. 1244, which was adopted on September 4, 2024 and submitted to HCD on September 5, 2024. Per Government Code § 66326(b)(1), the City responded on May 23, 2025 (within 30 days of receipt of HCD's findings). On June 3, 2025, HCD responded that they found the City's response substantially compliant with State ADU Law. Once amended, the City is instructed to upload the adopted Ordinance to HCD.

5. On June 23, 2025, the City of Ukiah received informal comments from the California Department of Housing and Community Development (HCD) and subsequently incorporated revisions to the proposed ordinance to ensure compliance with State law, including but not limited to Government Code section 66323, subdivision (a), and other applicable provisions.

6. On June 25, 2025, the Planning Commission continued to a certain date, July 9, 2025, at which time the Planning Commission held a duly noticed public hearing to consider the ordinance, receive the staff report, as well as public comments from interested parties, and after closing the public comments portion discussed the matter.

7. Through adoption of this ADU Ordinance, the City has responded to HCD's findings and intends to bring the City's ADU Ordinance into compliance with applicable State ADU laws.

SECTION TWO.

Division 9, Chapter 2, Article 5.3 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§9056 PURPOSE AND INTENT

The purpose of this article is to create an expedient ministerial approval process for residential accessory

dwelling units (ADUs). To do so, this article sets forth development standards in conformance with the California Government Code and tailored to meet the changing needs of Ukiah communities and expand housing choices in all neighborhoods.

§9056.1 GENERAL REQUIREMENTS

Accessory dwelling units (ADU) on lots developed with a primary single-family or multifamily residence or for which a primary residence is proposed shall be ministerially permitted and subject to the following standards/criteria:

A. The requirements of this article are applicable to all existing ADUs, as well as those proposed after the effective date hereof, except for legal nonconforming units, or as specifically provided herein. Existing ADUs as of the date hereof inconsistent with the provisions listed herein shall be considered legal nonconforming; provided, that they were legal at the time of their creation.

B. ADUs shall be deemed not to exceed the allowable density for the residential lot upon which an ADU is located. ADUs are deemed a residential use that is consistent with the existing general plan and zoning designation for the lot on which an ADU is located with a primary residence.

C. These regulations do not allow the division of property upon which an accessory dwelling unit is located unless all requirements of the applicable zoning district or State law are met.

D. An ADU may be rented separate from the primary residence but may not be sold or otherwise conveyed separate from the primary residence unless the conveyance meets the requirements of Government Code sections 66340 through 66342.

E. Accessory dwelling units provide complete independent living facilities for one or more persons The accessory dwelling unit is either attached to, or located within, the proposed or existing primary dwelling, including attached garages, storage areas or similar uses, or an accessory structure or detached from the proposed or existing primary dwelling and located on the same lot as the proposed or existing primary dwelling, including detached garages.

F. An ADU must meet all applicable building and fire codes, and shall have electric, water and sewer or septic service with the type of meter arrangement at the property owner's option. Water, sewer, and electrical services shall be available prior to the issuance of a building permit for an ADU. No new water or sewer connection fees may be required for ADUs that are contained within the existing space of a single-family or multifamily residence or accessory structure, unless the ADU is constructed with a new single-family home. Any impact fees charged for an accessory dwelling unit of seven hundred fifty (750) square feet or more shall be charged proportionately in relation to the square footage of the primary dwelling unit.

G. Nothing in this chapter shall preclude the development of a junior accessory dwelling unit as regulated by Ukiah City Code and Government Code sections 66333 through 66339.

§9056.2 DEVELOPMENT REQUIREMENTS

A. Applications for a building permit for an ADU shall be deemed approved if the local agency has not approved or denied the completed application within sixty (60) days. If approved, no additional parking or other development standards shall be applied except for building code and fire safety requirements.

B. Applications for a building permit within any zoning district where residential uses are allowed or permitted shall be approved ministerially to develop any of the following:

1. Unit Type: An ADU may be attached to an existing primary residence converted from a portion of the existing living area of the primary residence or attached garage, detached and on the same legal lot as a primary residence, converted from the entirety of or a portion of an existing accessory structure, or attached to an existing or proposed accessory structure.

2. Number of Units: The number of ADUs allowed on a single lot shall be:

    a) On a lot that contains an existing or proposed single-family dwelling: One (1) new ADU attached or detached. Additionally, one (1) converted ADU created from existing space of the single-family residence or an existing accessory structure. Converted ADUs must have exterior access. ADUs converted from existing structures are eligible for a 150 square-foot expansion to accommodate ingress and egress.

    b) On a lot that contains an existing multifamily dwelling: Eight (8) ADUs, detached from the multifamily structure, and up to twenty-five percent (25%) of the number of units in the existing multifamily dwelling converted from existing non-livable space in a multifamily structure. The number of Accessory Dwelling Units, however, allowable pursuant to this Subsection shall not exceed the number of existing units on the lot.

    c) On a lot that contains a proposed multifamily dwelling: Two (2) ADUs, detached from the multifamily structure.

C. Size: The maximum size of a detached ADU shall be one thousand two hundred (1,200) square feet, unless located on the same parcel as a multi-family structure, in which case there shall be no maximum unit size. The conversion of an existing accessory structure or a portion of the existing primary residence to an ADU is not subject to unit size requirements.

D. Improvements: The City shall not require, as a condition for ministerial approval of a permit application for the creation of an ADU, the correction of nonconforming zoning conditions. For purposes of this section, “nonconforming zoning condition” means a physical improvement on a property that does not conform with current zoning standards.

E. Lot Size: No minimum lot size shall be required.

F. Lot Coverage: The lot coverage limitation of the base zoning district shall not apply to the construction of an ADU.

G. Construction Standards: Not exclusive of other applicable State and local building and fire regulations, ADUs shall comply with the following requirements:

1. Structures within the State responsibility area (SRA) must comply with applicable local and state regulations for setbacks and fire-resistive construction.
2. Structures outside of the SRA must comply with building code regulations for fire-resistive construction, unless more restrictive standards are required pursuant to State law or regulation.
3. Fire sprinklers are not required for the ADU if not required for the primary residence, and the construction of an ADU may not trigger the requirement for fire sprinklers in an existing primary dwelling.

§9056.3 SETBACKS

The following yard setback requirements shall apply to ADUs:

A. Front Yard: The same as the existing primary residence, but no closer than five feet (5') for the construction of a new detached ADU greater than 800 square feet.

    1. For construction of a detached ADU, the application of front yard setbacks do not apply to an ADU of eight hundred (800) square feet or less when associated with a Single-Family Dwelling unit.
    2. For construction of a detached ADU, the application of front yard setbacks does not apply to construction an ADU when associated with a Multiple-Family Dwelling.

B. Side Yard or Rear Yard: Four feet (4').

C. No setback shall be required for an existing living area, garage, or accessory structure or a structure constructed in the same location and to the same dimensions as an existing structure that is converted to an ADU or to a portion of an ADU.

D. An ADU created within the existing space of an accessory structure can be expanded beyond the physical dimensions of the structure up to 150 square feet solely for the purpose of accommodating ingress and egress. The resulting ADU shall conform only to setbacks sufficient for fire and safety

§9056.4 PARKING

1. Parking requirements for the ADU shall be one off-street space (independently accessible or tandem) in addition to the accessible parking spaces required for the existing single-family or multifamily residence. If the primary residence was legally constructed at a time when on-site parking was not required, then only the parking space(s) for the ADU shall be required.

2. Off-street parking shall be permitted in setback areas in compliance with the definition of “off-street parking” found in section 9278B of this code or through tandem parking.

3. Parking standards will not be imposed for an ADU in any of the following instances:

    1. The ADU is located within one-half (1/2) mile of a public transit stop;

    2. The ADU is located within an architecturally and historically significant district;

    3. The ADU is part of the existing primary residence or an existing accessory structure;

    4. When on-street parking permits are required but not offered to the occupant of the ADU;

    5. When there is a car share vehicle located within one block of the ADU;

    6. When an application for an ADU is submitted with an application to create a new single-family or multifamily dwelling on the same lot.

4. If a garage (attached or detached), carport, or uncovered or covered parking structure is demolished in conjunction with the construction of an ADU or converted to an ADU, the City shall not require that those off-street parking spaces be replaced.

5. No parking shall be required for ADUs created pursuant to Government Code § 66323, including:

    1. Converted ADUs in existing single-family homes or accessory structures;

    2. New detached ADUs (≤ 800 square feet);

    3. ADUs converted from non-livable space in multifamily buildings (up to 25% of units);

    4. Detached ADUs on lots with multifamily structures.

§9056.5 LEGAL NONCONFORMING ACCESSORY STRUCTURES

ADUs converted from residential accessory structures determined to be legal nonconforming shall be subject to the following requirements:

A. A legal nonconforming residential accessory structure that is converted to an ADU, or reconstructed as an ADU to the same footprint and dimensions as the original structure, shall not be subject to setback requirements.

B. A legal nonconforming residential accessory structure that is converted to an ADU may be expanded up to one thousand two hundred (1,200) square feet if the expansion will comply with the height limit and setbacks for new detached ADUs.

C. Expansion of floor area within a nonconforming setback is limited to one hundred fifty (150) square feet, if necessary, to accommodate associated utilities, ingress and egress.

D. Delay of Enforcement of Building Standards.

    1. The owner of an Accessory Dwelling Unit that was built before January 1, 2020, may submit an application to the Building Official requesting correction of any violation of building standards. For purposes of this Section, “building standards” refers to those standards enforced by permitting agencies under the authority of Section 17960 of the California Health and Safety Code.

    2. The Building Official shall grant the application if determined that enforcement of the building standard is not necessary to protect health and safety. In making this determination, the Building Official shall consult with the Fire Official.

    3. Any notice to correct a violation of a building standard that is issued to the owner of an Accessory Dwelling Unit built before January 1, 2020, shall include a statement that the owner has a right to request a delay in enforcement of the building standard for an Accessory Dwelling Unit pursuant to this Section.

    4. The City shall not impose impact fees or connection or capacity charges for ADUs legalized under this Section.

§9056.6 HEIGHT

A. The maximum height for detached ADUs shall be twenty feet (20').

B. ADUs attached to the primary structure can be constructed to a height of twenty-five feet (25’) or the maximum height for the zoning district in which the unit is located.

C. ADUs may be taller than the primary residential structure.

D. ADUs above a garage (attached or detached) can be constructed to the maximum height for the zoning district in which the unit is located, or twenty-five feet (25'), whichever is greater.

E. Detached ADUs greater than twenty feet (20') in height may be approved through the granting of a minor site development permit.

SECTION THREE.

Division 9, Chapter 2, Article 5.4 of the Ukiah City Code is hereby amended to read as follows (unchanged text is omitted and shown by "* * *"):

§9057 PURPOSE AND INTENT

The purpose of this article is to implement the requirements of the Government Code and provisions of the General Plan Housing Element that encourage the production of affordable housing by expanding housing opportunities for all economic segments of the community.

§9057.1 GENERAL REQUIREMENTS

Junior accessory dwelling units (JADUs) shall be ministerially permitted in zoning districts that allow single-family dwelling units as permitted uses, in compliance with Government Code sections 66333 through 66339, the requirements of this section, and all other requirements of the applicable zoning district. The Department shall approve or deny an application to create a JADU within sixty (60) days from the date it receives a completed application if there is an existing single-family dwelling on the lot. For the purposes of constructing a JADU, attached garages are part of a single-family dwelling.

A. Permit Requirements and Fees: Construction permits (including, but not limited to, a building, electrical, or mechanical permit) shall be required to establish a JADU. A JADU shall not be considered a separate or new dwelling unit for purposes of applying building codes, fire codes, well and septic requirements, or collection of impact fees.

B. Timing: A JADU may be established after or concurrently with the single-family residence.

C. Development Standards:

1. Number of Units: One JADU is allowed per lot, within a single-family residence.

2. Unit Size: The floor area of a JADU shall not exceed five hundred (500) square feet. If the bathroom is shared with the single-family residence, it shall not be included in the floor area.

3. Location: A JADU shall be created from space in an existing, fully permitted, or proposed single-family dwelling or garage attached to the single-family residence.

4. Access: A separate, exterior entrance to the JADU shall be provided.

5. Bathroom: If a permitted junior accessory dwelling unit does not include a separate bathroom, the permitted junior accessory dwelling unit shall include a separate entrance from the main entrance to the structure, with an interior entry to the main living area.

6. Kitchen: A JADU shall include an efficiency kitchen. The efficiency kitchen must be removed when the JADU use ceases.

7. The owner of a Junior Accessory Dwelling Unit that was built before January 1, 2020, may submit an application to the Building Official requesting that correction of any violation of building standards be delayed for five years. For purposes of this Section, "building standards" refers to those standards enforced by permitting agencies under the authority of Section 17960 of the California Health and Safety Code.

    a. The Building Official shall grant the application if the Building Official determines that enforcement of the building standard is not necessary to protect health and safety. In making this determination, the Building Official shall consult with the Fire Marshal.
    b. Any notice to correct a violation of a building standard that is issued to the owner of a Junior Accessory Dwelling Unit built before January 1, 2020, shall include a statement that the owner has a right to request a delay in enforcement of the building standard for a Junior Accessory Dwelling Unit pursuant to this Section.
    c. The City shall not impose impact fees or connection or capacity charges for JADUs legalized under this Section.

D. Use Restrictions

1. JADUs may be rented but shall not be sold separate from the single-family residence.

2. JADUs may not be rented for periods of less than thirty (30) days.

3. The owner of the property must reside in either the single-family home or the newly created JADU. Owner-occupancy shall not be required if the owner is another governmental agency, land trust, or housing organization.

4. Deed Restriction: The property owner shall record a deed restriction that:
    a) Includes a prohibition on the sale of the junior accessory dwelling unit separate from the sale of the single-family residence, including a statement that the deed restriction may be enforced against future purchasers; and
    b) Specifies that the deed restriction runs with the land and is enforceable against future property owners; and
    c) Restricts the size and attributes of the JADU to those established by this section and Government Code section 66333; and
    d) Makes the City of Ukiah a third-party beneficiary of the deed restriction with the right to enforce the provisions of the deed restriction.

SECTION FOUR.

1. PUBLICATION: Within fifteen (15) days after its adoption, this Ordinance shall be published once in a newspaper of general circulation in the City of Ukiah. In lieu of publishing the full text of the Ordinance, the City may publish a summary of the Ordinance once 5 days prior to its adoption and again within fifteen (15) days after its adoption.

2. EFFECTIVE DATE: The ordinance shall become effective thirty (30) days after its adoption.

3. SEVERABILITY: Pursuant to Government Code section 66316, if any part of this ordinance is determined to be inconsistent with the requirements of state law governing accessory dwelling

units or junior accessory dwelling units, the ordinance shall be deemed null and void. In such an event, the City shall apply the standards established in state law for the approval of accessory dwelling units, unless a revised ordinance that complies with state law is duly adopted.

4. ENVIRONMENTAL REVIEW: The ordinance regulates the construction and development of accessory dwelling units, which are either additions to existing structures or new small structures, both of which are categorically and statutorily exempt under CEQA. The City Council, exercising its independent judgment, finds that the adoption of this ordinance is exempt from the California Environmental Quality Act (CEQA) pursuant to the State CEQA Guidelines (Title 14, California Code of Regulations, Chapter 3, beginning at Section 15000). Because the proposed ordinance will not result in a direct or reasonably foreseeable indirect physical change in the environment, it is also exempt under Section 15061(b)(3), the "common sense" exemption, as it can be seen with certainty that there is no possibility the ordinance may have a significant effect on the environment

Introduced by title only on August 20, 2025, by the following roll call vote:

AYES: Councilmembers Criss, Orozco, Sher, and Mayor Crane
NOES: None
ABSENT: None
ABSTAIN: None

Adopted on September 3, 2025, by the following roll call vote:

AYES:
NOES:
ABSENT:
ABSTAIN:

_____
Douglas F. Crane, Mayor

ATTEST:

_____
Kristine Lawler, CMC/City Clerk

Agenda Item No: 8.d.

MEETING DATE/TIME: 9/3/2025

ITEM NO: 2025-967

City of Ukiah

AGENDA SUMMARY REPORT

SUBJECT: Adoption of a Resolution Authorizing the City Manager to Execute Agreements with the California Department of Transportation for the City of Ukiah East Perkins Multimodal Transportation Plan; and Approve Corresponding Budget Amendments Once the Agreements have been Executed.

DEPARTMENT: Community Development

PREPARED BY: Andrea Trincado, Grants Manager

PRESENTER: Consent Calendar

ATTACHMENTS:

1. Resolution E Perkins St Multimodal Transportation Plan
2. FY2425 SC Grant Application_East Perkin Multimodal Trans Plan
3. Sustainable Communities FY 202425 Application Guidelines

Summary: Council will consider adoption of a resolution authorizing the City Manager to execute a project-related agreement(s) with the California Department of Transportation for the City of Ukiah East Perkins Multimodal Transportation Plan, and approve the related budget amendments, to take effect upon execution of the agreement(s).

Background: In January 2025, Staff submitted a grant application to the Caltrans Sustainable Transportation Planning Grant Program for the City of Ukiah East Perkins Multimodal Transportation Plan. The application requested $286,395 in state grant funds, with a required local match of $37,105, and a total project cost of $323,500. Matching funds will be provided through engineering and grants management staff time spent on the project.

On July 1, 2025, the California Department of Transportation (Caltrans) notified the City that its proposal was selected for award. To accept the funding and begin work, Caltrans requires City Council adoption of a resolution authorizing the City Manager to execute the grant agreement(s) with the State.

The East Perkins Multimodal Transportation Plan will evaluate and recommend improvements to the pedestrian, bicycle, transit, and vehicular network along the East Perkins Street corridor from Main Street to Oak Manor Drive—approximately 0.70 miles spanning the U.S. Route 101 highway. The goal is to develop a community-driven plan that improves safety, accessibility, and circulation; advances equity and climate resilience; and promotes active transportation, housing, and economic development along this key gateway corridor into Ukiah.

Please see the attached draft Resolution (Attachment 1), Grant Proposal (Attachment 2), and Sustainable Communities Grant Guidelines (Attachment 3).

Discussion: This grant will allow for the completion of a conceptual plan, but does not include funding for the design or implementation phases. However, a completed plan, based on both professional and community input, provides an important foundation for future grant applications that could fund design and implementation, which would not likely occur for at least five years.

Staff recommends that Council adopt the attached resolution authorizing the City Manager to execute project-

related agreement(s) with the California Department of Transportation for the City of Ukiah East Perkins Multimodal Transportation Plan, and approve the related budget amendments, effective upon execution of the agreement(s).

Recommended Action: Adopt a resolution authorizing the City Manager to execute a project-related agreement(s) with the California Department of Transportation for the City of Ukiah East Perkins Multimodal Transportation Plan, and approve the related budget amendments, to take effect upon execution of the agreement(s).

BUDGET AMENDMENT REQUIRED: Yes

CURRENT BUDGET AMOUNT: $0

PROPOSED BUDGET AMOUNT: $0

FINANCING SOURCE: Caltrans Sustainable Communities Transportation Planning Grant

REVENUE: No GRANT: Yes

PREVIOUS CONTRACT/PURCHASE ORDER NO.: N/A

COORDINATED WITH: Tim Eriksen, Public Works Director, Andrew Stricklin, Senior Engineer; Jim Robbins, Housing and Grants Manager; Craig Schlatter, Community Development Director

STRATEGIC PLAN (SP): SP1A; SP1C; SP2A, SP2B

CLIMATE INITIATIVES (CI): CI-2b

GENERAL PLAN ELEMENTS (GP): MOB-1.9, MOB-2.3, MOB-3.4, MOB-4.1, MOB-4.7, ENV-7.2,

Approved:
Sage Sangiacomo, City Manager

RESOLUTION NO. 2025-

RESOLUTION OF THE CITY OF UKIAH CITY COUNCIL AUTHORIZING THE CITY MANAGER TO EXECUTE AGREEMENTS WITH THE CALIFORNIA DEPARTMENT OF TRANSPORTATION FOR THE CITY OF UKIAH EAST PERKINS STREET MULTIMODAL TRANSPORTATION PLAN

WHEREAS, The City Council of the City of Ukiah is eligible to receive Federal and/or State funding for certain transportation planning related plans, through the California Department of Transportation;

WHEREAS, a Restricted Grant Agreement is needed to be executed with the California Department of Transportation before such funds can be reimbursed through the Transportation Planning Grant Program;

WHEREAS, the City of Ukiah wishes to delegate authorization to execute these agreements and any amendments thereto;

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Ukiah, that the Council authorizes the City Manager or designee, to execute all restricted grant agreements and any amendments thereto with the California Department of Transportation.

PASSED AND ADOPTED at a regular meeting of the City Council held on September 3, 2025, by the following roll call vote:

AYES:
NOES:
ABSENT:
ABSTAIN:

ATTEST

_____
Douglas F. Crane, Mayor

_____
Kristine Lawler, City Clerk

Application Checklist

The following documents are required and must be submitted via Smartsheet in one single PDF document, not to exceed 25 MB. The Signature Page may be submitted separately if there are issues combining with the single PDF document. Keep the file name brief, as files are corrupted when file names are too long. Refer to the Grant Application Guide for additional information and/or samples. Failure to include any of the required documents will result in a reduced application score.

PDF documents should be submitted in their fillable PDF formats. The original file formats will be required upon grant award.

Required Application Documents	
(✓)	**Ensure these items are completed prior to submitting to Caltrans via Smartsheet**
✔	Application Cover Sheet (complete in Smartsheet and submit with single PDF document)
✔	Signature Page (Electronic signatures accepted; may submit as a separate file if there are issues with combining with single PDF document)
✔	Application Narrative
✔	Scope of Work
✔	Cost and Schedule
	Third Party In-Kind Valuation Plan (if applicable, required upon award)
✔	Map of Project Area
Supplemental Documentation (not required)	
✔	Graphics of Project Area (when applicable)
✔	Letter(s) of support
✔	Data

PART A. APPLICATION INFORMATION

FY 2025-26

Grant Category (select only one)

Climate Adaptation (MPOs, RTPAs, Transit Agencies, Cities, Counties, Tribes, other Public Transportation Planning Entities)

	11.47% Local Match requirement (Not Applicable to Native American Tribal Governments)

Sustainable Communities (MPOs with sub-applicant, RTPAs, Transit Agencies, Cities, Counties, Tribes, other Public Transportation Planning Entities)		**Strategic Partnerships** (MPOs & RTPAs only) **Strategic Partnerships Transit** (MPOs, RTPAs & Transit Agencies only)	
x	Sustainable Communities Competitive (11.47% Local Match requirement) **Not applicable to Native American Tribal Governments**		Strategic Partnerships (FHWA SPR Part I) (20% Local Match requirement)
	Sustainable Communities Competitive Technical (11.47% Local Match requirement) **Not applicable to Native American Tribal Governments**		Strategic Partnerships Transit (FTA 5304) (11.47% Local Match requirement)

Application Submittal Type (more than one may be selected)

New		**Prior Phases**		**Re-Submittal**	
	New Application		Continuation of a prior project. If so, list the Grant FY and project title below.	x	Re-submittal from a prior grant cycle.
				2	How many times has an application been submitted for this project, including this one?

PART B. PROJECT INFORMATION

Project Title and Location

Project Title	City of Ukiah East Perkins Street Multimodal Transportation Plan		
Project Location (City)	Ukiah	Project Location (County)	Mendocino

Funding Information

1. Is the applicant proposing to meet the minimum local match requirement or an over-match? Use the Match Calculator to determine the appropriate match. Match Calculator (Posted on STPG Website)

   ☒ Minimum Local Match ☐ Over-Match

2. What is the source of Local Match funds being used?
   (MPOs – Federal Toll Credits, PL, and FTA 5303 cannot be used to match Sustainable Communities Competitive or Adaptation Planning grants)

   ☒ Local Transportation Funds ☒ Local Sales Tax ☐ Special Bond Measures

   ☐ Other, specify:

Grant Funds Requested	Local Match (Cash)	Local Match (In-Kind)	Total Local Match	% Local Match	Total Project Cost
$286,395	**$37,105**	**$0**	**$37,105**	**11.47%**	**$323,500**

Project Description (3-5 Sentences Max.)	
Insert Application Narrative: 1. Project Description	The proposed City of Ukiah East Perkins Street Multimodal Transportation Plan will address deficiencies in pedestrian, bicycle, and transit facilities by studying needs and recommending multimodal and streetscape improvements for East Perkins Street (from Main Street to Oak Manor Drive), a key corridor connecting US 101 to downtown Ukiah. The goal of this project is to develop a community-vetted, technically feasible plan to create a safer, more efficient transportation corridor that promotes active transportation, housing, economic development, climate resilience, and provides accessible mobility options for Ukiah's under-resourced communities. Solutions will be informed by community and stakeholder engagement, data collection, and conceptual analysis. The plan will also consider upcoming developments within the corridor, including a new county courthouse, hospital expansion, and affordable housing projects, which are expected to increase transportation demand. Key outcomes include a meaningful and comprehensive community engagement, an assessment of existing conditions and needs, concept alternatives analysis, and a final plan featuring recommendations, a 30% conceptual design, cost estimate, and an implementation strategy, which will developed in collaboration with Caltrans, the Mendocino Council of Governments, Mendocino Transit Authority, and other key stakeholders.

Project Type

Choose the Project Type that best represents the focus of the proposed project. See Grant Application Guide for examples. Select a maximum of two project types.

- ☐ Active Transportation (Bicycle and Pedestrian)
- ☐ Climate Change (Infrastructure Adaptation, Vulnerability and Resiliency)
- ☐ Complete Streets (Multimodal specific type)
- ☐ Corridor (Local Streets or Highways)
- ☐ Freight/Goods Movement
- ☐ General Plan-Related (Circulation Element, Land Use Element, Specific Plan)
- ☒ Multimodal (Motorized and Active Transportation)
- ☒ Safety (Vision Zero, Safe Routes to Schools)
- ☐ Technical (Modeling, VMT Mitigation, ZEV Infrastructure, ZEB Transition, etc.)
- ☐ Transit (Bus, Light Rail, and Commuter Rail Service)
- ☐ Other, specify:

PART B. PROJECT INFORMATION (CONTINUED)

Under-Resourced Community Definitions

If applicable to the project, what tools were used to identify the under-resourced communities in the project area? Choose all that apply.

- ☒ Rural Communities of 50,000 or less and outside of urbanized areas
- ☐ Native American Tribal Governments
- ☐ Regionally/Locally Defined Under-Resourced Communities
- ☒ At/Below 80% Assembly Bill 1550 (Gomez, Statutes of 2016)
- ☐ At/Above 75% California Department of Education, Free or Reduced Priced Meals Data
- ☐ At/Above 75% CalEnviroScreen Version 4.0
- ☐ At/Below 25% California Healthy Places Index

PART C. CONTACT INFORMATION*

	Primary Applicant	Sub-Applicant	Sub-Applicant
Organization (Legal name)	City of Ukiah	CivicWell	Additional Contract City of Ukiah
Dept./Division	City Manager	Community Design	Public Works Department
Street Address	300 Seminary Avenue	520 Capitol Mall, Suite 440	
City	Ukiah	Sacramento	
Zip Code	95482	95814	
Phone Number	707-467-5719	916-448-1198 x310	
Executive Director Name	Sage Sangiacomo	Bernadette Austin	
Title	City Manager	Executive Director	
Executive Director E-mail	ssangiacomo@cityofukiah.com	baustin@civicwell.org	
Financial Manager Name	Daniel Buffalo	Beatrix Koev	
Title	Finance Director	Chief Financial Officer	
Financial Manager E-mail	dbuffalo@cityofukiah.com	bkoev@civicwell.org	
Contact Person Name	Andrea Trincado	Josh Meyer	**Tim** Eriksen
Title	Project & Grants Administrator	Program Director	Public Works Director
Contact Phone Number	707-463-6778	916-448-1198 x310	707-463-6280
Contact E-mail	atrincado@cityofukiah.com	jmeyer@civicwell.org	teriksen@cityofukiah.com

*Use additional pages if necessary.

PART D. COMPLIANT HOUSING ELEMENT

City/County Primary/Sub-Applicants for Sustainable Communities Grants	Yes	No
Does the City/County have a compliant Housing Element? If No, explain the current status:	X	
Has the City/County submitted Annual Progress Report to the California Department of Housing and Community Development for calendar years 2022 and 2023?	X	

PART E. OTHER FUNDING PROGRAMS

Applicants may leverage other program funds for this planning grant, as long as the activities are eligible.

	Yes	No	N/A
Is the applicant applying for the Governor's Office of Planning and Research (OPR) Climate Adaptation Planning Grant Program? Applicants should not submit the same project application to both funding programs. However, applicants may propose to leverage funds from one funding program to another. For instance, an applicant with a large project may propose to fund one component with Caltrans funds, and another with OPR funds. Applicants may also propose two entirely different projects to each funding program. If yes, identify the differences between each proposal, and briefly summarize the leverage opportunity if awarded both Caltrans and OPR funding:		X	
Is the applicant applying for any other funding programs to complete this project? If yes, list them here:		X	

PART F. LEGISLATIVE INFORMATION

Use the following link to determine the appropriate legislative members in the Project area.

Search by address: http://findyourrep.legislature.ca.gov/

State Senator(s)		Assembly Member(s)	
District	Name	District	Name
2	State Senator Mike McGuire	2	Assemblymember Chris Rogers

PART G. LETTERS OF SUPPORT

List all letters of support received for the proposed project. Letters should be addressed to the applicant. Letters received after the final application filing date will not be considered.

Name/Agency	Name/Agency
Assemblymember Chris Rogers California State Assembly, District 2	Radhika Misri, Project Manager, **North Coast Opportunities/Walk & Bike Mendocino**
Tina Tyler O'Shea, Executive Director, **Blue Zones Project-Mendocino County**	
Jacob King, Executive Director, **Mendocino Transit Authority**	
Eric Stevens, President, **Adventist Health Northern California Network**	
Maureen Mulheren, **Mendocino County Second District Supervisor**	
Marie Jones, **Mendocino County Planning Commissioner**	
Katrina M. Kessen, Executive Director, **Greater Ukiah Business and Tourism Alliance**	
Eileen Mitro, Founding Member & Coordinator, **Climate Action Mendocino**	

Sustainable Transportation Planning Grant Program
GRANT APPLICATION SIGNATURE PAGE

If selected for funding, the information contained in this application will become the foundation of the contract with Caltrans.

To the best of my knowledge, all information contained in this application is true and correct. If awarded a grant with Caltrans, I agree that I will adhere to the program guidelines.

Applicant			
Authorized Official (Applicant)			
Print Full Name	Sage Sangiacomo		
Title	City Manager, City of Ukiah		
Signature	Sage Sangiacomo	Date	1/17/25
Sub Applicant(s)*			
Authorized Official (Sub-Applicant)			
Print Full Name			
Title			
Signature		Date	
Authorized Official (Sub-Applicant)			
Print Full Name			
Title			
Signature		Date	
Authorized Official (Sub-Applicant)			
Print Full Name			
Title			
Signature		Date	

*Use additional pages if necessary.

Sustainable Transportation Planning Grant Program

GRANT APPLICATION SIGNATURE PAGE

If selected for funding, the information contained in this application will become the foundation of the contract with Caltrans.

To the best of my knowledge, all information contained in this application is true and correct. If awarded a grant with Caltrans, I agree that I will adhere to the program guidelines.

Applicant			
Authorized Official (Applicant)			
Print Full Name			
Title			
Signature		Date	
Sub Applicant(s)*			
Authorized Official (Sub-Applicant)			
Print Full Name	Bernadette Austin		
Title	Chief Executive Officer		
Signature	*Bernadette Austin*	Date	1/14/25
Authorized Official (Sub-Applicant)			
Print Full Name			
Title			
Signature		Date	
Authorized Official (Sub-Applicant)			
Print Full Name			
Title			
Signature		Date	

*Use additional pages if necessary.

PART H. APPLICATION NARRATIVE

FY 2025-26

Project Information	
Organization (Legal name)	City of Ukiah
Project Title	City of Ukiah East Perkins Street Multimodal Transportation Plan
Project Area Boundaries	East Perkins Street, Ukiah, from Main Street to Oak Manor Drive
Project Timeframe (Start and End Dates)	January 1, 2026 - April 29, 2028 (28 months)

Do not alter application format and font size 10

Application Narrative

1. **Project Description (10 points) - Do not exceed the space provided (5 sentences maximum)**
   Briefly summarize project in a clear and concise manner, including why the project is necessary, major deliverables, parties involved, and any connections to relevant local, regional, and/or State planning efforts.

The proposed City of Ukiah East Perkins Street Multimodal Transportation Plan will address deficiencies in pedestrian, bicycle, and transit facilities by studying needs and recommending multimodal and streetscape improvements for East Perkins Street (from Main Street to Oak Manor Drive), a key corridor connecting US 101 to downtown Ukiah. The goal of this project is to develop a community-vetted, technically feasible plan to create a safer, more efficient transportation corridor that promotes active transportation, housing, economic development, climate resilience, and provides accessible mobility options for Ukiah's under-resourced communities. Solutions will be informed by community and stakeholder engagement, data collection, and conceptual analysis. The plan will also consider upcoming developments within the corridor, including a new county courthouse, hospital expansion, and affordable housing projects, which are expected to increase transportation demands. Key outcomes include meaningful and comprehensive community engagement, an assessment of existing conditions and needs, conceptual alternatives analysis, and a final plan featuring recommendations, a 30% conceptual design, cost estimate, and an implementation strategy, which will developed in collaboration with Caltrans, the Mendocino Council of Governments, Mendocino Transit Authority, and other key stakeholders.

2A. Project Justification (15 points) - Do not exceed the space provided

- Describe the problems or deficiencies the project is attempting to address, as well as how the project will address the identified problems or deficiencies
- Describe the ramifications and impact of not funding this project
- Clearly define the existing issues surrounding the project (e.g., transportation issues, inadequate transit services, impacts of heavy trucking on local streets, air pollution, etc.)
- Competitive applications support the need for the project with empirical data
- Describe how this project addresses issues raised
- Define the public benefit
- Explain how the public was involved with identifying issues

East Perkins Street is a critical transportation corridor providing primary access between US101 and downtown Ukiah, as well as other key destinations such as the county courthouse, the hospital, pharmacy, the main library, housing, groceries, restaurants, and other amenities. Current conditions prioritize vehicular traffic while discouraging pedestrian and bicycle travel, with no dedicated bicycle facilities and narrow sidewalks adjacent to high-volume vehicular lanes. The corridor also lacks essential streetscape features like shade trees, lighting, and landscaping to create a more secure and comfortable environment for non-motorized users. Long wait times at signalized intersections contribute to idling vehicles and poor air quality. Pedestrian crossings extend up to 80' long, increasing the potential for pedestrian/vehicle collisions. Despite its intersection with the Rail Trail—a section of the Great Redwood Trail—the lack of adequate pedestrian and bicycle facilities on East Perkins discourages use of the Rail Trail to access destinations along the corridor. Sight distances at the eastern US101 access ramp are notably short, creating a difficult access ramp/street interface. The Blue Zones Project, which promotes healthy living through built environment changes. inspired community and City Council support for multimodal improvements, such as roundabouts and a road diet, to transform East Perkins Street. However, the City requires further community input, needs assessment, and detailed analysis to refine priorities and evaluate alternative solutions in order to advance concepts for development.

RAMIFICATIONS OF NOT FUNDING – Without funding, the City will miss the opportunity to use this planning effort as the foundation for investments and pursuit of grants to improve safety and mobility along this critical corridor. East Perkins Street is expected to see significant development in the coming years, with the new courthouse, hospital expansion, and a proposed low-income senior housing development. This development will increase the demand for both motorized and non-motorized travel solutions. Planning studies are necessary to prepare for this growth. As a rural, disadvantaged community, Ukiah relies on grants to fill the funding gap. Failure to fund this study will likely result in worsening safety conditions as the area grows, ultimately exacerbating the challenges faced by residents.

EXISTING ISSUES – East Perkins Street is a heavily traveled corridor, carrying on average 14,000 motor vehicles per day (2040 General Plan EIR) between US101 and Ukiah's urban core. It is also an important transit route with multiple service lines and the highest average weekday total boardings/alightings in Ukiah (see attached heat map from the 2024 Transit Feasibility Study). The street is vehicle-centric, with four travel lanes, narrow curb-attached sidewalks and long crosswalks through multiple lanes of traffic. The absence of bike facilities forces cyclists to ride in the vehicle lanes. The highway ramps between

2A. Project Justification (continued)

Orchard and Oak Manor Drive carry between 2,900 and 4,840 daily (2022 Caltrans Ramp Volumes) on and off the freeway, contributing to bottlenecks. Additionally, the corridor lacks shade and is extremely hot during the summer, with temperatures that frequently exceed 100 degrees. The street lacks adequate lighting, reducing nighttime pedestrian and bicyclist visibility. Together these conditions contribute to a stressful and discouraging environment for non-motorists, users of transit, and motorists alike. Indeed, the 2024 Ukiah Local Road Safety/Action Plan found that East Perkins Street includes some of the most significant high collision and high injury intersections and roadway segments in the city, with unsafe speed and improper turning as the most common violation category (see attached maps and tables).

This PROJECT ADDRESSES ISSUES RAISED by encouraging diverse public input with a comprehensive and meaningful engagement process to understand community needs, studying existing conditions and analyzing innovative solutions, resulting in a well-informed final plan that recommends implementable multimodal transportation solutions to address safety and accessibility needs, while meeting climate goal objectives. It will explore mutlimodal and traffic calming improvements such as roundabouts, lane reductions and enhanced crosswalks to provide more space and protection for pedestrian and bicycle facilities, and first/last mile improvements to transit, while slowing traffic, improving flow, and reducing points of conflict for safety and circulation. Slower speeds with improved efficiency for gas vehicles, coupled with added shade canopy with streetscape landscaping, have the added benefit of reducing greenhouse gas emissions and heat islands, improving air quality, and reducing exposure to extreme heat for non-motorized travelers. These improvements bring equity and dignity to Ukiah's most vulnerable populations, youth, seniors, people with disabilities and others unable to drive or that do not have access to a car and rely on walking, rolling, biking and transit for mobility needs. Promoting active transportation options creates more opportunities for the community to engage in healthy lifestyle choices and encourages future development by making the corridor a more inviting and accessible location.

The PUBLIC BENEFIT will be the development of a community-informed multimodal transportation plan that will be used to pursue implementation funding for the recommended improvements to to increase safety, improve circulation, and beautify the corridor, leading to enhanced active transportation options and improved quality of life for local residents as well as visitors. Further benefits include encouraging infill housing and economic development by calming traffic and making the street more accessible.

PUBLIC INVOLVEMENT – The project builds upon the needs identified by community members through numerous planning efforts and studies, such as the 2022 Ukiah Local Road Safety Plan and the 2024 Ukiah Transit Center Feasibility Study, and at the July 2023 City Council workshop in which Blue Zones transportation experts presented potential tools and strategies for transforming the corridor. Engagement will consist of an interactive series of community workshops, online surveys, walkability audits, and pop up booths at community events and the Civic Center. Initial events and activities will elicit and confirm needs and preferences. The input will then be used to prepare solutions for motorized and non-motorized transportation and streetscape improvements to the East Perkins corridor. Concepts will be presented for feedback and refinement to facilitate community ownership and support. Engagement strategies include targeted outreach to disadvantaged community members through community resource centers and nonprofits. Meetings and materials will be offered in Spanish, as well as English, and food will be provided.

2B. Under-Resourced Communities Justification (5 points) - Do not exceed the space provided

- Explain how the project area or portions of the project area are defined as an under-resourced community, including Native American Tribal Governments and rural communities
- Explain how the proposed project addresses the needs of the under-resourced community
- Describe how under-resourced communities will benefit from the proposed planning project
- Cite data sources, the Grant Application Guide Appendix A tools used to define under-resourced communities, and include a comparison to the statewide thresholds that are established in each tool

Ukiah is a small rural community located outside an urban area with a population of about 16,500, qualifying it as a under-resourced community as defined in Appendix A of the Grant Guidelines. American Community Survey (ACS) 2023) 5-Year census data indicate the median household income (MHI) for the two census tracts 115 and 116 where the project area is located is $46,750 and $61,089 - 49% and 63% of the statewide MHI of $96,344 - which meets the under-resourced community definition of at or below 80% of the state MHI per AB 1550. The ACS data also indicate 8,741 people reside in the two tracts, with 51% and 38% of the populations reported as Hispanic. Additionally, Healthy Places Index ranks Tract 116 in the 24.5th percentile as a whole and bottom 10.3th percentile for access to a car compared to the state. Residents in Tract 115 rank in the bottom 22.1th percentile for access to a car. The tribal lands of Pinoleville, Guideville, Coyote Valley, and Redwood Valley Rancheria are all within close proximity with Ukiah acting as a hub for resources. The project will significantly benefit these residents, many of whom live within walking or bicycling distance of East Perkins Street. A plan that improves conditions for walking, bicycling and connections to transit and key destinations will benefit all residents but will be a greater benefit for lower income residents who live and work in the neighborhoods near the corridor, as well as those who do not own a car or who are more dependent on walking, bicycling and transit to meet their mobility needs.

2C. Under-Resourced Communities Engagement (5 points) - Do not exceed the space provided

- See Grant Application Guide, Appendix A, for community engagement best practices
- Describe how the proposed effort would engage under-resourced communities, including Native American Tribal Governments and rural communities. Include specific outreach methods for involving under-resourced communities
- Describe how under-resourced communities will continue to be engaged during the next phases after the proposed planning project is complete, including project implementation.

The project will ensure inclusive engagement of under-resourced communities, including Native American Tribal Governments and rural residents, through a comprehensive Public Outreach Plan. Engagement methods include in-person and virtual public workshops, surveys, stakeholder meetings, listening sessions, virtual and in-person site visits, and focus groups, with Spanish and English materials and translation services available. Outreach will include low-tech options such as posters, flyers, and comment cards to ensure accessibility. The four federally-recognized tribal governments near the project area (Pinoleville, Guidiville, Coyote Valley, and Redwood Valley Rancherias) will receive direct outreach, including engagement at tribal meetings. Vecinos en Acción will be a partner in outreach to the Spanish speaking community members, with information and community workshop advertisements in the local Spanish newspaper Al Punto. Partnerships with community organizations, non-profits, and agencies will help engage underserved groups such as low-income individuals, seniors, veterans, and youth. During implementation, updates will be provided to the City of Ukiah's Diversity and Equity Committee, along with regular email notifications, social media updates, and follow-up workshops to keep underserved communities informed and involved.

3. Grant Specific Objectives (Total 35 points)
Integrate the following Grant Program Considerations (Grant Application Guide, Chapter 1.2) in the responses for 3A-G below, as applicable:

- Caltrans Strategic Plan
- California Transportation Plan (CTP)
- Modal Plans that Support the CTP
- Strategic Highway Safety Plan
- Title VI and Environmental Justice
- Climate Action Plan for Transportation Infrastructure
- California Adaptation Strategy
- Master Plan for Aging

3A. Grant Specific Objectives (5 points) - Do not exceed the space provided

- Explain how the proposal encourages local and regional multimodal transportation, housing and land use planning that furthers the region's RTP SCS (where applicable)
- Demonstrate how the proposed effort would coordinate transportation, housing, and land use planning components of the project to inform one another (i.e., regular coordination meetings between responsible entities, joint community meetings, letters of commitment from all relevant implementing agencies, etc.
- Explain how the proposed effort would contribute to shifts in land use towards more sustainable and equitable communities, such as more affordable housing near transit or more compact regional development patterns (Reference Grant Application Guide, Chapter 2.2, for example project types)

This proposal directly encourages regional multimodal transportation by seeking to improve and expand non-motorized options and increase the safety of vehicular options along the busy East Perkins corridor. The CTP and CAPTI, as well as the region's RTP, support and encourage complete streets and active transportation options. Proposed enhancements using innovative design concepts, such as roundabouts and road diets with streetscape elements, reduce non-motorized crossing distances and encourage walking and biking. These improvements maximize efficient use of the right of way and provide improved connectivity between travel destinations, such as work, shopping, medical appointments, and home. Expanding multimodal and streetscape elements from the downtown core to US101 will create a gateway corridor that will revitalize the area and improve conditions for local underserved residents. The plan will coordinate transportation, housing, and land use planning, by bringing together representatives from Caltrans, the Adventist hospital, the Judicial Council, Pear Tree Shopping Center, Mendocino County, Mendocino Transit Authority, along with responsible City Departments in regular coordination meetings to ensure recommended improvements are supported by decision makers and are implementable. The City is a regional leader in land use planning and affordable housing development, leading to the local goals of improved compact regional development patterns. The City has recently adopted a 2040 General Plan, including Mobility and Housing Elements (Dec 2022). The City has also submitted all Housing Element annual reports to HCD, and it was recently awarded a Prohousing Designation by HCD, with a score of 38 points. Over 100 units of new housing were permitted in 2022 in Ukiah, many of which were in close proximity to East Perkins Street. 77 units of low- and moderate-income housing were recently constructed within walking distance on East Gobbi Street in a mixed-use development, and an additional 35 units of tribal housing units are in the advanced planning stages. Residents adjacent to the corridor will be able to engage in active modes of transportation with increased equity and safety for non-motorized travelers.

3B. Grant Specific Objectives (5 points) - Do not exceed the space provided

- Explain how the proposal contributes to the State's GHG reduction targets and advances transportation related GHG emission reduction project types/strategies (i.e., mode shift, demand management, travel cost, operational efficiency, accessibility, and coordination with future employment and residential land use, etc.)

This proposal contributes to the State's GHG reduction targets by providing recommended non-motorized facility improvements along East Perkins Street, where bike lanes are absent and pedestrian infrastructure requires modernization. Improving connections to key destinations, including housing, low/moderate income housing, shopping, medical services, County services, and the Great Redwood Trail/Rail Trail expands the active transportation network, encouraging mode shift with improved access and conditions for residents, visitors, shoppers, and employees able to walk and bike to destinations These enhancements support a shift away from single-occupant vehicles, reducing the Vehicle Miles Traveled (VMT).

Community-supported traffic calming concepts such as roundabouts/road diet will improve circulation and vehicular efficiency, reducing congestion and idling vehicles, which lowers carbon emissions. Adding street trees will also provide carbon sequestration. The project aligns with the Caltrans 2020-24 Strategic Plan goals to "enhance and connect the multimodal transportation network" and "advance equity and livability in all communities." Transportation demand is expected to rise with the relocation of the County Courthouse to East Perkins Street in the next 3-5 years, a planned hospital expansion, and preliminary plans for affordable housing. Strengthening multimodal connections, particularly to the Great Redwood Trail, will support sustainable growth, reduce GHG emissions, and promote equitable access for all.

3C. Grant Specific Objectives (5 points) - Do not exceed the space provided

- Explain how the proposal supports other State goals, including but not limited to:
  - State Planning Priorities (Government Code Section 65041.1)
  - Climate Adaptation Goals (State Adaptation Strategy)
  - Goals and Best Practices cited in the 2024 RTP Guidelines, Appendices E and G

This proposal supports State Planning Priorities (Gov. Code Sec 65041.1) to promote infill development and equity by improving existing motorized and non-motorized infrastructure, and streetscape enhancements to support infill development and/or reuse of unused or vacant buildings along the corridor.

The project supports Climate Adaptation Goals (State Adaptation Strategy) PRIORITY 1: Strengthen Protections for Climate Vulnerable Communities with shade trees (GOAL A; Action 4) increase community participation in planning transportation projects to build climate resilience - it does this by including a thorough community outreach & engagement process to invite community input; and GOAL C; Action 7) promote sustainable land use planning and transportation investments that support walkable and bikeable communities and infill development to build resilience of climate vulnerable communities - it does this by identifying multimodal and streescape improvements that expand and improve walkable and bikeable transportation options and build climate resilient infrastructure by planting carbon sequestering and shade producing streetscapes and by reducing vehicular travel & accompanying GHGs.

2017 RTP Guidelines, Appendix L (pg 334) indicates that bicycle and walking transportation modes promote a healthy lifestyle and reduce environmental impacts. A key focus of this project is expanded and improved bicycle and pedestrian access along this corridor, thus supporting a healthy lifestyle.

3D. Grant Specific Objectives (5 points) - Do not exceed the space provided

- Explain how the proposal encourages stakeholder involvement
- List the stakeholders involved in the planning effort (e.g., first responders, community-based organizations, local housing and public health departments, transit agencies, and partners including State, federal, local agencies)
- Explain how stakeholders will be involved throughout the project

Stakeholders will be engaged throughout the process through participation in a project advisory group and a technical working group, focus meetings and community workshops, which will include two walking audits. This will provide ample opportunity to provide meaningful input into identifying improvements needed along the corridor. Online public engagement tools (e.g. surveys, mapping, website postings, etc.) will also be used to seek input and engage stakeholders. Low-tech options (flyers, comment cards, printed information, etc.) will be available for those without access to technology.

Stakeholders will include representatives from the City of Ukiah (Public Works, Community Development, Planning Division, Housing Division, Fire, Safety), Caltrans, Judicial Council of California, County of Mendocino, Great Redwood Trail Authority, Mendocino Transit Authority, Walk & Bike Mendocino, Mendocino Council of Governments, Native American Tribal Governments, and Adventist Health Ukiah Valley. Stakeholders may be involved throughout the project in a variety of ways, including attending the well-advertised community events, targeted meetings to discuss project elements and solicit input, accessing the project website for information or providing comment, and receiving project updates via an email contact list.

3E. Grant Specific Objectives (5 points) - Do not exceed the space provided

- Explain how the proposal involves active community engagement
- Describe the specific public outreach methods/events that will be employed throughout the project
- Explain how public input will inform the project
- Describe how the effort will survey the public at the end of each outreach event to gauge effectiveness of these activities for the planning effort

This proposal involves active community engagement, reaching out in various ways to low-income, minority, limited-English proficiency, disabled, senior, veteran, Native American, business, and other community members to gather meaningful input on multimodal improvements. A series of initial community workshops will invite feedback on existing transportation facilities and solicit input on needs and priorities. This input will identify the needs and priorities of the community and provide objectives to guide the transportation planners and engineers in development of concepts and solutions. Online surveys will provide additional opportunities for members of the public that prefer contributing comments through online platforms. Walkability audits and tours with community members will offer an opportunity to assess current conditions and discuss possible outcomes. The consultant will use public input, data, and research to develop concepts for review at a second round of community forums, offering further engagement. Information gathered will inform the draft Plan, and outreach on the draft Plan will provide a third opportunity for public comment and contribution to the development of the Plan. A variety of outreach methods will advertise these events and solicit input, including working with local non-profits, news releases, flyers, email notifications, and a project website. Events and online resources will offer individuals the opportunity to provide feedback to assess the effectiveness of the outreach efforts.

3F. Grant Specific Objectives (5 points) - Do not exceed the space provided

- Explain how the proposal assists in achieving the Caltrans Mission and Grant Program Objectives (Grant Application Guide, Chapter 1.2): Safety, Sustainability, Preservation, Accessibility, Innovation, Economy, Health, and Social Equity, as applicable

SUSTAINABILITY - This Objective to "promote reliable and efficient mobility of people...while meeting the State's GHG emission reduction goals" is achieved by the project's purpose to improve/expand bicycle & pedestrian infrastructure. PRESERVATION - This Objective to "preserve the transportation system through...improving quality of life" is met by the project's focus to provide enhanced active transportation opportunities which benefit an active and healthy lifestyle. ACCESSIBILITY - This Objective to "increase accessibility of the system and mobility of people" is met by the project's purpose to create more accessibility by improving/expanding multimodal transportation modes, including bicycle, pedestrian, and transit modes. SAFETY - This Objective to "prioritize the elimination of fatal and serious injury crashes and enhance the safe use of roadways" is met through the project's aim to reduce vehicular/non-vehicular conflicts and increase safety of intersecting travel modes along the corridor. HEALTH - This Objective to "decrease exposure to local pollution sources...and promote physical activity across the lifespan... through transportation means" is met by the project's goal to provide an improved and expanded active transportation network between US101 and downtown Ukiah, thus decreasing the need for vehicular travel. SOCIAL EQUITY - This Objective to "promote transportation solutions that prioritize the needs of underserved communities...while encouraging meaningful public involvement" is met by inviting underserved community to become engaged in the planning process to identify and comment on the multimodal transportation needs and accessibility along the East Perkins Street corridor.

3G. Grant Specific Objectives (5 points) - Do not exceed the space provided

- Explain how the proposal ultimately results in funded and programmed multimodal transportation system improvements
- Discuss next steps for project implementation, including timing for programming improvements that would result from the planning effort

The proposed planning project will result in community vetted, well informed plan that identifies best solutions for multimodal and streetscape improvements to the East Perkins Street corridor. The plan will develop recommendations, a preliminary cost estimate, and develop the recommended concept to a 30% design that is technically sound and feasible. The deliverables will provide a foundation that will position the project for the next steps toward implementation.

The plan will provide a solid foundation for City of Ukiah staff to prepare competitive grant applications for state and/or federal grant funding to secure funding for construction of the recommended improvements. The project's inclusion of a robust public engagement process is expected to aid in future grant applications that require a thorough public outreach process.

The City seeks to implement this plan within a five to seven year time frame, provided that grant funding for construction can be secured within this timeline. The plan will be instrumental in obtaining implementation funding.

4.	**Project Management (Total 30 points)** See Scope of Work and Cost and Schedule samples and checklists for requirements (Grant Application Guide, Appendix B), also available on the Caltrans grants website: https://dot.ca.gov/programs/transportation-planning/division-of-transportation-planning/regional-and-community-planning/sustainable-transportation-planning-grants
4A.	**Scope of Work (15 points)**
4B.	**Cost and Schedule (15 points)**

Scope of Work Checklist

The Scope of Work (SOW) is the official description of the work that is to be completed during the contract. Tasks 1-6 outlined in the SOW are for illustrative purposes only. **Applications with missing components will be at a competitive disadvantage.** Please use this checklist to make sure your Scope of Work is complete.

Scope of Work Checklist	
(✓)	**Ensure these items are completed prior to submitting to Caltrans**
✓	Use the Fiscal Year 2025-26 template provided
✓	Include the activities discussed in the grant application
✓	List all tasks using the same title as stated in the Project Cost and Schedule
✓	Include task numbers in accurate and proper sequencing, consistent with the Cost and Schedule
✓	Exclude sub-task numbers; only include sub-headings
✓	Exclude tasks for project management and/or staff/consultant coordination; these activities should be spread among relevant tasks
✓	Include a thorough Introduction to describe relevant background, related planning efforts, the project and project area demographics, including a description of the under-resourced community involved with the project, if applicable
✓	Include a thorough and accurate narrative description of each task
✓	Task 01 is a required task. It must be titled "Project Administration", it cannot exceed 5% of the grant award amount, and only the grantee and sub-recipient(s) can charge against this Task. This Task must only include the following activities and deliverables: • Caltrans and grantee Project kick-off meeting at the start of the grant • Invoicing and quarterly reporting to Caltrans • DBE Reporting (federal grants only)
✓	Include Task 02 for the procurement of a consultant (if needed). This task is for the grantee and sub-applicant(s) only.
✓	Include detailed public participation and services to diverse communities in the Public Outreach Task (excluding technical projects)
✓	Identify public outreach strategies in a manner that provides flexibility and allows for a diverse range of outreach methods (both in-person and virtual), excluding technical projects
✓	Include a Task(s) for a Draft and Final product. The draft plan must include an opportunity for the public to provide feedback (excluding technical projects).
✓	Include a summary of next steps your agency will take towards implementing the project in the Final Product
✓	List achievable project deliverables for each Task
✓	EXCLUDE environmental, complex design, engineering work, and other ineligible activities outlined in the Grant Application Guide

SCOPE OF WORK

Project Information	
Grant Category	**Sustainable Communities Competitive**
Grant Fiscal Year	**FY 2025-26**
Project Title	**City of Ukiah East Perkins Street Multimodal Transportation Plan**
Organization (Legal name)	**City of Ukiah**

Disclaimer

Agency commits to the Scope of Work below. Any changes will need to be approved by Caltrans prior to initiating any Scope of Work change or amendment.

Introduction

East Perkins Street serves as the primary east-west connection between US-101 and downtown Ukiah's commercial core at Perkins/State Street. Building on the success of the recent Downtown Streetscape Project, which transformed State Street (a former segment of US-101) with a road diet, widened sidewalks, improved crossings, and enhanced streetscape elements like lighting, street trees, and pedestrian amenities, the City of Ukiah seeks to bring similar improvements to East Perkins Street. These upgrades on State Street have created safer, more sustainable, and resilient infrastructure, setting a benchmark for reimagining Ukiah's transportation network.

The proposed transformation focuses on East Perkins Street, spanning from Main Street to Oak Manor Drive on the eastern side of US-101. Currently, this corridor functions as an extension of the highway, characterized by narrow 5-foot sidewalks adjacent to four to five lanes of high-volume, fast-moving vehicular traffic. The absence of bicycle facilities, despite the corridor's connection to the Rail Trail (Great Redwood Trail), exacerbates challenges for active transportation users. These auto-centric conditions contribute to significant stress and discomfort for pedestrians and cyclists.

A recent presentation by Dan Burden, Director of Innovation and Inspiration at the Blue Zone Project, highlighted the need for multimodal improvements on East Perkins Street, including roundabouts and a road diet. These recommendations align with the City's adopted plans and have galvanized community interest in creating a safer, more inclusive corridor. However, the City seeks additional community input and technical analysis of these and other concepts before best solutions for multimodal improvements to the corridor can be determined.

The City of Ukiah East Perkins Street Multimodal Transportation Plan will capitalize on this momentum through a community-driven planning process. The plan will identify needs, collect data, and analyze current conditions to develop actionable recommendations for multimodal enhancements. Proposed improvements will align with the City of Ukiah 2040 General Plan, the Mendocino Council of Governments' 2022 Regional & Active Transportation Plan, and the California Transportation Plan 2050, all of which prioritize "Complete Streets" solutions. This approach ensures equitable, safe, and efficient travel for all modes, including walking, biking, driving, and public transit.

Key enhancements under evaluation include roundabouts, a road diet, streetscape improvements, and gateway features to create a safe and inviting connection between US-101 and downtown Ukiah. The plan will also address access to critical regional destinations along

East Perkins Street, including Adventist Health Ukiah Valley Hospital, the future Mendocino County Superior Courthouse, the Ukiah Main Branch Library, and nearby low- and moderate-income housing, the Rail Trail (Great Redwood Trail), as well as retail centers such as the Pear Tree Shopping Center. Anticipated development projects, including the new courthouse, hospital expansion, and a new road extending from Hospital Drive, underscore the urgent need to prepare East Perkins Street for increased transportation demand.

As an underserved community with a median household income at 68.5% of the statewide average, Ukiah stands to benefit significantly from these improvements. Census tracts along East Perkins Street show even lower income levels, with tracts 115 and 116 at 65.3% and 45.8% of the statewide median, respectively. Planning multimodal upgrades for this corridor will support low- to moderate-income residents, enhance equitable access to regional resources, and contribute to climate goals by encouraging active transportation.

With Caltrans as an active partner, this planning effort will coordinate closely on improvements within and adjacent to Caltrans' right of way. The final study will serve as a roadmap to pursue funding for implementation, ensuring East Perkins Street evolves into a modern, multimodal gateway corridor that enhances connectivity, sustainability, and quality of life for Ukiah residents.

Project Stakeholders

City of Ukiah

The City of Ukiah is the lead applicant and will be the grant recipient. The project will be overseen by a small team comprised of staff from the Public Works Streets and Community Development Planning, Housing and Grants Management Divisions, with a key point of contact assigned for grant administration and coordination. The City will execute the Restricted Grant Agreement with Caltrans and execute an agreement with its sub-applicant, CivicWell, a 501(c)3 non-profit organization. The City will conduct a competitive bid process to select a qualified consultant team with multimodal transportation planning, traffic engineering and urban design expertise. The City will provide $37,105 in matching funds to meet the 11.47-percent local match. Staff will coordinate with Caltrans District staff and other project partners and agencies, establish a Project Advisory Group and Technical Working Group, participate in community engagement activities, attend meetings, provide data and policy documents, review consultant products, and direct revisions. City staff will prepare quarterly invoices and reports to Caltrans with documentation support from CivicWell and the selected consultant. Staff will also coordinate with partners to help publicize the project and ensure public participation in all aspects of the community planning process.

CivicWell

CivicWell will assist the City with project coordination and documentation. Staff will help the City assemble and facilitate a Project Advisory Group, organize the community engagement events, develop publicity materials with local input, and document public input for inclusion in the resulting plan document. CivicWell staff will work closely with the City and consultant team to design and implement community engagement activities including in-person and virtual workshops, walk audits, and stakeholder listening sessions and focus group meetings. CivicWell has extensive experience in public engagement in planning processes, multi-modal transportation planning and community design. Since 2001, CivicWell has worked on over 80 planning projects funded by Caltrans throughout the state. CivicWell has staff that is fluent in Spanish and can produce outreach materials and conduct meetings and workshops in English and Spanish.

Consultant

The selected consultant (or team of consultants) will have expertise in active transportation, multimodal transportation planning, traffic engineering and urban design. The consultant will do the following:

- Analyze and document detailed baseline conditions for multimodal access, connectivity, traffic safety and operations, and transit service and operations,
- Actively participate in facilitation of community engagement activities,
- Develop design concepts and visualizations, generate recommendations that respond to input from residents, stakeholders and responsible agencies,
- Conduct technical analysis which will include:
    - Review and documentation of existing right of way, land use and transit conditions, and previous analysis for potential alignments and improvements on the corridor,
    - Collect and evaluate traffic data for all modes at a detailed level.
    - Develop conceptual plans and design detailing proposed infrastructure and operational improvements (with the final recommended plan developed to 30% completion).
    - Prepare preliminary cost estimates, implementation phasing, actions, presentations, and approvals required for proposed improvements.
- Prepare the City of Ukiah East Perkins Street Multimodal Transportation Plan document.

Community and Agency Stakeholders

As described in the scope of work tasks below, numerous stakeholders will be engaged throughout the planning effort, including (but not limited to) representatives from Caltrans, Mendocino Council of Governments, Mendocino Transit Authority, Mendocino County Departments of Planning, Social Services, Public Health, and Transportation, City of Ukiah Fire Authority, Ukiah Police Department, Ukiah diversity and Equity Committee, the local tribes of Pinoleville, Guidiville, Coyote Valley Rancheria, and Redwood Rancheria, Vecinos en Accion, Great Redwood Trail Authority, Adventist Health - Mendocino County, the Blue Zones Project, Judicial Council of California/Mendocino County Court, Walk & Bike Mendocino, North Coast Opportunities, Greater Ukiah Business and Tourism Alliance, and Climate Action Mendocino, City of Ukiah Housing Division, East Perkins Street business owners and property owners, and organizations that work with youth, seniors, and people with disabilities. Other stakeholders may be included, according to availability, such as local schools, disability advocates, and other non-profits.

Overall Project Objectives

The primary objectives of this project are to promote multimodal transportation by creating safer, more accessible, and efficient travel networks for all users while enhancing aesthetics and establishing inviting gateways into Ukiah from regional corridors.

Community support has highlighted interest in improvements such as roundabouts and a road diet along the corridor. The planning effort will evaluate these options, among others, as potential solutions to meet project objectives. This process will involve comprehensive data collection, research, and analysis of current conditions along East Perkins Street, from the eastern ramps of US-101 to Main Street, as well as the anticipated impacts of proposed changes.

Recommendations will identify the most effective strategies to achieve project goals. The City will collaborate closely with Caltrans to assess any impacts on the highway system and, ensure recommended improvements function in harmony with highway operations, and where feasible, propose recommendations to enhance highway-street intersections.

Additional objectives include:

- Develop, evaluate, and identify a shared vision and design concepts for new and enhanced pedestrian, bicycle, and transit access and connectivity.
- Improve safety for vulnerable road users in the corridor such as youth, seniors, pedestrians, bicyclists, and people with disabilities.
- Develop equitable, viable and affordable mobility choices for under-resourced populations.
- Develop mobility solutions that support infill housing and mixed-use development within walking distance to key commercial and service destinations and transit stops.
- Reduce VMT and GHG emissions through increased active transportation and shared mobility options, and operation and circulation improvements for motor vehicles,
- Facilitate community input and collaboration with a wide range of people through a wide range of engagement methods on their needs and desires to create a shared vision for the mobility network that will enhance pedestrian, bicycle, and transit access and connectivity.

Summary of Project Tasks

The following is a description of tasks to complete the project.

Task 01: Project Administration

The City will manage and administer the grant project according to the Grant Application Guidelines, Regional Planning Handbook, and the executed Restricted Grant Agreement between Caltrans and the City. Costs for this task will not exceed 5 percent of the grant award amount.

Kick Off Meeting with Caltrans
The City will attend a project kick-off meeting with Caltrans to review the scope of work for the grant, grant reporting, invoicing and other elements of the grant requirements.

Quarterly Progress Reports
The City, with support from CivicWell, will submit quarterly project reports and fiscal reports to Caltrans District staff to provide a summary and percent completion of project progress and grant/local match expenditures.

Invoicing
The City will submit complete invoice packages to Caltrans District staff (at least quarterly, but no more frequently than monthly).

Task Deliverables
• Notes from the kick-off meeting with Caltrans • Quarterly progress reports (City, CivicWell) • Quarterly invoice packages (City, CivicWell)

Task 02: Consultant Procurement and Sub-Contracting

Request for Proposals
In consultation with Caltrans staff, the City will prepare and advertise a request for proposals and scope of work to solicit a consultant (or team of consultants) with the necessary expertise, qualifications, and experience to develop the plan. The RFP will follow the proper procurement procedures established by Caltrans for these projects. A Review Committee will be formed to evaluate the proposals and select the consultant.

The consultant procurement process will comply with state and, if applicable, federal requirements, including the Local Assistance Procedures Manual for non-Architectural and Engineering consultants, the Grant Application Guide, the Regional Planning Handbook, and the terms of the executed grant contract.

Consultant On-boarding
The City will execute an agreement with the consultant to deliver the Multimodal Plan and supporting engagement and hold a kick-off meeting with the consultant and CivicWell.

Agreement with Sub-applicant
The City will execute an agreement with CivicWell to assist with project management, consultant coordination, jurisdiction and agency engagement, and stakeholder and community outreach, engagement, education and documentation.

Task Deliverables
• Copy of RFP (City) • Copy of agreement between the City and consultant (City) • Copy of the agreement between the City and CivicWell (City) • Agenda and notes from the kick-off meeting (City, CivicWell)

Task 3: Outreach Planning and Coordination

The City will identify key stakeholders, assemble an advisory group and technical working group, develop an outreach and engagement strategy and produce and distribute outreach materials. Activities to be completed under this task are described below.

Assemble Stakeholder List
The City, with support from CivicWell, will assemble and maintain a stakeholder contact database of representatives from the public, nonprofit and private sectors and other interest groups that reflect the demographics and perspectives of City residents. Special efforts will be made to identify agencies and organizations that work with disadvantaged communities. The initial list will include:

- Caltrans District 1
- Mendocino Council of Governments
- Mendocino Transit Authority
- Mendocino County Departments of Planning, Social Services, Public Health, and Transportation
- Ukiah Valley Fire Authority
- Ukiah Police Department
- City of Ukiah Housing Division
- Ukiah Diversity and Equity Committee
- Pinoleville, Guidiville, Coyote Valley, and Redwood Valley Rancherias
- Vecinos en Acción
- Great Redwood Trail Authority
- Adventist Health – Mendocino County
- Blue Zones Project – Mendocino County
- Great Redwood Trail Authority
- East Perkins Street Property and Business Owners
- Grater Ukiah Business and Tourism Alliance
- North Coast Opportunities
- Walk & Bike Mendocino
- Climate Action Mendocino

- County Courthouse Representatives
- Organizations that work with youth, seniors and people with disabilities

The database will continue to evolve throughout the project under the activities described below and subsequent tasks.

Convene Advisory Group
The City will establish a community and stakeholder outreach advisory group of approximately 12 individuals for project guidance and meet periodically during the course of the project. Participants will include representatives from local and regional agencies and other organizations and groups from the stakeholder list described above. CivicWell will assist with planning, organization, facilitation, and documentation of meetings. The group will identify important sensitivities to consider and pertinent information regarding the conditions, history, and needs of residents, workers, and visitors. It will help determine strategies for framing and communication and for engaging all population segments and maximizing participation at public events, as well as opportunities for coordination and synergy with other local events, initiatives and planning activities impacting the community. Meetings will also provide a venue for discussion of plan concepts and strategies for implementation.

The group is expected to meet on at least three occasions during the course of the project, with ongoing communication, solicitation for input and support with outreach and promotion, and additional check-in meetings as needed.

- Meeting #1 will take place during the existing conditions phase. Topics will include key issues to address in the Plan, problem areas to study, locations with the greatest safety challenges, scheduling and location for outreach events, key stakeholders to consult, and strategies for engaging underserved residents.

- Meeting #2 is anticipated before the community workshops. The agenda will focus on a review of existing conditions prepared by the consultant team and outreach and planning for the events.

- Meeting #3 will occur following the initial round of community workshops and engagement activities to debrief the input received to date and potential gaps to consider for further outreach.

Convene Technical Working Group
The City will establish a technical working group that will meet periodically, virtually or in-person, throughout the project on an as-needed basis. It will include key representatives from Caltrans District 1, City of Ukiah Departments of: Public works, Planning, Fire and Police, Mendocino Transit Authority, and Mendocino Council of Governments, and others as deemed necessary by the group. The group will identify data sources, documents, and critical issues to address, discuss and vet concepts developed by the consultant, and collect feedback and input on plan elements prior to seeking community input on proposed improvements. CivicWell and the consultant will assist the City with planning, organization, facilitation, and documentation of meetings.

Project Outreach Plan
CivicWell will prepare a detailed outreach plan and assist with implementation in close coordination with the City and in consultation with the advisory group to inform and engage the public. It will include an outreach schedule, stakeholder and target audience contact list, and methods, channels, venues and activities to engage diverse segments of the community for input and feedback. Forums will include an online public engagement platform, surveys, community workshops, focus group meetings, and a project website. Opportunities for informational presentations to tribal councils and other community groups, and tabling at community events will also be included. Means will be identified for direct engagement with under-resourced and

marginalized populations that have been historically excluded or overlooked in planning processes. Low-tech outreach and input options (posters, flyers, comment cards, etc.) will be provided as appropriate for people without access to technology. Materials and activities will be provided in Spanish and English as needed.

Promotion
The City and CivicWell, with support from the advisory group, will identify effective outreach and publicity methods to ensure public awareness and involvement. Materials will be produced in English and Spanish as necessary to inform all segments of the community about the planning process and how they can participate. Materials will be shared digitally, and through email, newsletters and social media sources. Advisory group members and select stakeholders will be asked to distribute flyers and information about the project and ways to participate through their networks and at standing meetings, gatherings and events. Opportunities will be identified to engage with stakeholders through print materials and word of mouth at places where residents go for other purposes such as coffee shops, community centers, civic, faith-based and cultural centers, and other gathering places. Community-based organizations will be solicited for promotion and direction on how to best reach and communicate with their constituents.

The City and CivicWell will distribute updates to local and regional media, such as the Ukiah Daily Journal, Ukiah Post, The Mendocino Voice, Al Punto and other outlets identified by the advisory group. The City and CivicWell will also consult with advisory group members to identify social media platforms that residents use. Announcements, presentations and plan documents will be posted on the project website, and events will be publicized on social media platforms and through the website. The City also uses social media to inform residents about engagement in projects and will do so here as well in both English and Spanish.

Task Deliverables
• List of stakeholders (CivicWell) • Advisory Group meeting agendas and notes (CivicWell) • Technical Working Group meeting agendas and notes (CivicWell, Consultant) • Project outreach plan (CivicWell) • Publicity materials, including flyers, posters, announcements and other Informational materials (City, CivicWell)

Task 4: Existing Conditions/Needs Assessment

The consultant will conduct a comprehensive analysis of existing conditions along the East Perkins Street corridor. Specific components are described below.

Policies and Plans Review
The consultant will review and summarize relevant sections of local and regional plans, policies, studies and improvement projects to increase mobility options in Ukiah and improve safety, access, mobility and development opportunities on East Perkins Street. Key documents and studies include the City of Ukiah 2040 General Plan Mobility Element, Land Use Map, Zoning Code and Urban Core Rehabilitation and Transportation project, Mendocino Council of Government's 2022 Regional & Active Transportation Plan, California Transportation Plan 2050, and others that will be identified in consultation with the technical working group and advisory group.

Site Visits
The consultant will conduct a field assessment of the corridor and activity areas to observe and assess existing right of way, roadway, traffic control, pedestrian, bicycle and transit conditions and infrastructure, and adjacent land uses. One or more site visits will be scheduled in

conjunction with meetings with the project advisory group and technical working group, enabling the consultant, City, CivicWell, and others to tour the corridor for shared observations and collective input.

Base Maps
The consultant will document existing corridor cross sections (right of way, curb to curb widths, travel and turning lanes, on-street parking, sidewalks and streetscape, etc.) by defined segment through review of existing ariel maps, GIS data and CAD layers as available, and site checks for verification. The consultant will prepare an aerial base map that includes existing and planned pedestrian and bicycle facilities, vehicle travel and turning lanes, transit routes and stops, right of way and property lines, and other key features. The base map will be used to illustrate detailed existing conditions for design and analysis work, and to generate easy-to-interpret maps for reference and input from residents and stakeholders during meetings, in-person and virtual engagement activities.

Infrastructure and Operations
The consultant will collect a wide range of data, including traffic counts and patterns for vehicles, bicycles, and pedestrians; collision and safety data; traffic signal operations; utility maps, and right-of-way surveys; and highway and highway ramp volumes. A traffic analysis using existing volume and peak hour data will identify operational bottlenecks. The consultant may identify key areas to collect traffic counts to supplement available data. Additionally, the consultant will consider development forecasts for projects planned along the corridor to ensure the assessment aligns with future growth and demand. The findings will be integrated with insights gathered through community engagement activities such as listening sessions, surveys, and workshops. These activities will provide valuable perspectives from users of the corridor, helping to identify barriers and inform the needs assessment.

Existing Conditions and Needs Assessment Report
The consultant will prepare a report that summarizes relevant policies, plans and projects, safety, traffic, access and land use data analysis and conditions. It will also include identified multimodal barriers, identified needs, and opportunities for improvement. A draft report will be submitted for review and feedback from the working group and advisory group, with revisions incorporated as necessary. This assessment will emphasize data-driven insights while reflecting community priorities, serving as a foundational document for subsequent planning and design phases.

Task Deliverables
• Existing Conditions Summary /Needs Assessment Report (Consultant) • Base maps in digital format and print format for engagement activities (Consultant)

Task 5: Community Engagement

The project will prioritize meaningful, inclusive, and representative engagement to affirm community values and aspirations, and gather input on transportation needs and preferences for mobility and streetscape solutions along the corridor. It will include an iterative series of meetings and events with activities to gather input and provide opportunities for feedback. Spanish translation services will be provided at all events, and key outreach materials will be produced in Spanish to ensure accessibility. Meetings will be offered in both in-person and virtual formats to maximize reach and participation.

Community Workshops
Three rounds of community-wide public workshops are planned for this project – the first to solicit community input early in the project, the second to review and confirm findings, input received and proposed designs and recommendations for the corridor, and the last to be held after the draft plan is available for public review. The City and CivicWell, with help from the advisory group and local co-hosts, will arrange facilities and food (in accord with grant guidelines for eligible snack and refreshment expenses), and other supporting promotional and celebratory activities.

The conceptual scope of events includes:

- Round 1 - *Needs and Possibilities.*
  The City will host a kick-off workshop in which CivicWell and the consultant will present tools and strategies for active transportation, complete streets and placemaking, followed by small group map activities or stations where participants will identify issues and mark up opportunities for change. The team will also conduct a walking audit with community members of key locations on the corridor in conjunction with the workshop. A second workshop will follow to confirm the input received and present initial ideas for change that the team will explore and bring back to the public for feedback.

- Round 2 – *Concepts and Recommendations.*
  The City will host a workshop where the consultant will present proposed improvements and a walking tour where participants can discuss proposed changes in the field. Breakouts and weighing activities will be used to identify support and concerns, preferences and priorities, and collect feedback to inform refinements.

- Round 3 – *Draft Plan Review.*
  Following release of the draft plan for public review, the City, with support from CivicWell, will organize and widely publicize an evening workshop where the consultant will present the full draft plan to stakeholders and the community. This will provide an opportunity for stakeholders and residents to provide feedback on the tools, designs and recommendations and to make sure critical issues have been addressed.

Focus Meetings
The City, with input from the advisory group and support from CivicWell and selected consultant, will conduct approximately 5 to 10 small group listening sessions to learn about mobility needs across sectors and representative population segments. These will be scheduled in conjunction with the existing conditions/needs assessment phase and the first round of workshops. Additional meetings may be held as needed during the second round and plan development phase. These sessions will be designed to capture candid feedback, insights, and ideas in a casual and open format. Participants may include (but not be limited to) individuals from:

- Housing authorities, affordable housing providers, and apartment communities
- Corridor area property owners and developers
- Businesses, property owners and employers
- K-12 School students, schools, and district representatives
- Tribal governments
- Organizations that represent and work with Latino and Spanish-speaking populations
- Organizations that work with and represent people with disabilities
- Organizations that work with and represent youth, seniors and veterans
- Environmental justice and social equity advocacy groups
- Local art, music, food and entertainment associations and advocates

Website
A City of Ukiah East Perkins Street Multimodal Transportation Plan web page will be established to will provide project updates and access to plan documents, publicize upcoming events, and

serve as an additional hub to engage with stakeholders and residents for comments and ideas. Workshop presentations will be recorded and hosted on the website. Informational and educational materials on tools and strategies proposed for the corridor will also be included.

Online and In-Person Survey
The City and CivicWell will distribute an online survey in English and Spanish developed with the consultant to solicit community input on transportation needs along the East Perkins Street corridor. It will be widely advertised with a QR code for easy access. A paper version will be available for completion or pick up at in-person events and other locations for those who do not have access to the internet or prefer to complete by hand. Special emphasis will be placed on collecting input from historically marginalized populations to inform solutions that increase access to affordable and healthy transportation opportunities.

Task Deliverables
• Community Workshop agendas, presentations and notes (CivicWell, Consultant) • Focus group participant lists and meeting noes (CivicWell) • Project website/ongoing updates (CivicWell, Consultant) • Electronic and paper survey and summary of results (CivicWell, Consultant)

Task 6: Conceptual Alternatives and Evaluation

Building upon the corridor assessment and stakeholder and community input described in the previous tasks, the consultant will develop conceptual alternatives for vetting with the working group, stakeholders and the public as part of the concepts and recommendations workshop described under Task 2.

Geometric Design and Operations Evaluation
The Consultant will prepare multimodal and streetscape improvement concepts for the East Perkins Street corridor along with an analysis of how they may affect the operations, safety and capacity of the roadway network. The analysis will include evaluation of various solutions, with a particular focus on previously identified community-supported tools and strategies such as roundabouts, lane reductions, wider sidewalks, bicycle lanes and landscaping improvements. Layouts and cross sections will provide spatial visualization of proposed concepts, highlighting opportunities, constraints, and the relationship between proposed improvements and existing infrastructure. Each concept will be assessed for feasibility, including right-of-way constraints and acquisition needs, corridor and US 101 interchange traffic impacts, vehicle turning movement needs, and site distance and operational issues along the corridor where the street extends over US 101.

Plans and Projects Consistency Review
The analysis will incorporate a review of relevant current and in progress polices, plans and improvement projects, such as MCOG's Pedestrian Needs Assessment, MCOG's Regional and Active Transportation Plan, the Ukiah Valley Area Plan, the City of Ukiah's 2040 General Plan Mobility, Land Use and Housing Elements, Downtown Zoning Code Map, Downtown Streetscape Improvement Project, Local Road/Safety Action Plan, Bike and Pedestrian Master Plan, and Climate Action Plan. Additionally, future development plans—such as the Mendocino County Courthouse project (anticipated completion in 2026) and the Ukiah Valley Adventist Hospital expansion—will be reviewed to ensure alignment with anticipated land use and transportation demands. The Consultant will also integrate concepts inspired by Dan Burden's 2023 Blue Zones presentation on design improvements for the corridor which gained initial community support and emphasizes creating healthier, more walkable communities.

Summary Report
The development and evaluation of alternatives will culminate in a summary report that synthesizes the findings and presents a range of preliminary concepts for the corridor. This report will include detailed technical analysis, maps, and data visualizations to facilitate community review and feedback. The preliminary concepts will reflect a balanced approach to meeting multimodal transportation goals, addressing safety, accessibility, and connectivity, while aligning with the community's vision and priorities. This work will serve as the foundation for refining and prioritizing recommendations to be included in the final plan.

Task Deliverables
• Conceptual layouts and cross sections (Consultant) • Presentation materials for meetings and Community Workshop to present findings and concepts being considered, comments received (Consultant) • Draft Proposed Alternatives Report (Consultant)

Task 7: Recommendations and Draft Plan

Using the findings from previous tasks, the consultant will develop feasible and implementable recommendations for the "City of Ukiah East Perkins Street Multimodal Transportation Plan." These recommendations will be designed to address multimodal transportation needs while ensuring alignment with community priorities and technical feasibility. Components of the plan will include:

- Documentation of existing conditions, constraints and opportunities.
- Documentation of the public process and input.
- A series of maps illustrating with preferred conceptual designs for roadways, intersections, sidewalks and other paths of travel (e.g., multiuse trails) to improve safety, access, comfort and convenience for walking, bicycling and use of transit.
- Evaluation of the consistency of recommendations with agency standards and impacts of proposed recommendations on the highway system.
- Analysis of impacts on safety, capacity and operations for all modes, reduction in VMT and GHGs, and potential to support infill and housing development opportunities.
- Prioritization of the proposed improvements with preliminary cost estimates and phasing to enable components of the Plan to be pursued through various funding sources and timelines, maximizing flexibility and financial viability.

The consultant will prepare and the City will circulate the administrative draft of the Multimodal Mobility Plan for review by the technical working for review and feedback. The draft will then be released for public review and presented at a community workshop as described under Task 3. The document will be made available for download from the Plan website.

Task Deliverables
• Draft Plan, including 30% conceptual design for preferred improvements (Consultant) • Presentation materials for Draft Plan and recommendations (Consultant) • Public review comments (City, CivicWell)

Task 8: Final Plan and City Council Review/Approval

Based on the feedback received during the draft plan review, the Consultant will prepare a proposed final plan for City staff review. Feedback will be incorporated as appropriate, and the

final City of Ukiah East Perkins Street Multimodal Transportation Plan will be presented for acceptance by the City Council in a public meeting.

The City Council will be kept appraised through presentations to the Complete Streets Ad Hoc Committee, a two-member City Council advisory group. The consultant and CivicWell will brief the Committee on project progress, input received, and proposed concepts and recommendations for feedback at key points during the project. The City, with support from the consultant and CivicWell will present the draft plan to the Committee for their review before finalization and City Council approval.

Task Deliverables
• Final Plan that includes a summary of next steps towards implementation, identifies potential grant funding opportunities, and credits FHWA, FTA, and/or Caltrans on the cover or title page, submitted to Caltrans in an ADA accessible electronic copy (Consultant) • Complete Streets Ad Hoc Committee meeting agendas, minutes and any presentation materials (City, CivicWell, Consultant) • City Council staff report, presentation materials and minutes with Council acceptance/approval (City, Consultant)

California Department of Transportation

Sustainable Transportation Planning Grant Program

COST AND SCHEDULE

Grant Category	Sustainable Communities Competitive
Grant Fiscal Year	FY 2025-26
Project Title	City of Ukiah East Perkins Street Multimodal Transportation Plan
Organization (Legal name)	City of Ukiah
Disclaimers	Agency commits to the Cost and Schedule below. Any changes will need to be approved by Caltrans prior to initiating any Cost and Schedule change or amendment. Use only whole dollars in the financial information fields. No rounding up or down and no cents. Use the Local Match Calculator to ensure that grant and local match amounts are correct: Local Match Calculator (posted on-line)
Reimbursements/ Invoicing	Does your agency plan to request reimburesement for indirect costs? ☐ Yes ☑ No If yes, what is the estimated indirect cost rate? _____ Does your agency plan to use the Tapered Match approach for invoicing purposes? ☐ Yes ☑ No

Task #	Task Title	Grant Amount*	Estimated Local Cash Match*	Estimated Local In-Kind Match*	Estimated Total Project Cost*	FY 2025/26												FY 2026/27												FY 2027/28											
						J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
01	Project Administration (no more than 5% of total grant funds)	$13,280	$1,721	$0	$15,000																																				
02	Consultant Procurement and Sub-Contracting	$4,869	$631	$0	$5,500																																				
3	Outreach Planning and Coodination	$25,231	$3,269	$0	$28,500																																				
4	Existing Conditions/Needs Assessment	$36,740	$4,760	$0	$41,500																																				
5	Community Engagement	$49,134	$6,366	$0	$55,500																																				
6	Conceptual Alternatives and Evaluation	$65,512	$8,488	$0	$74,000																																				
7	Recommendations and Draft Plan	$74,365	$9,635		$84,000																																				
8	Final Plan and City Council Review/Approval	$17,263	$2,237	$0	$19,500																																				
	Totals	**$286,395**	**$37,105**	**$0**	**$323,500**																																				

Maps of Project Area

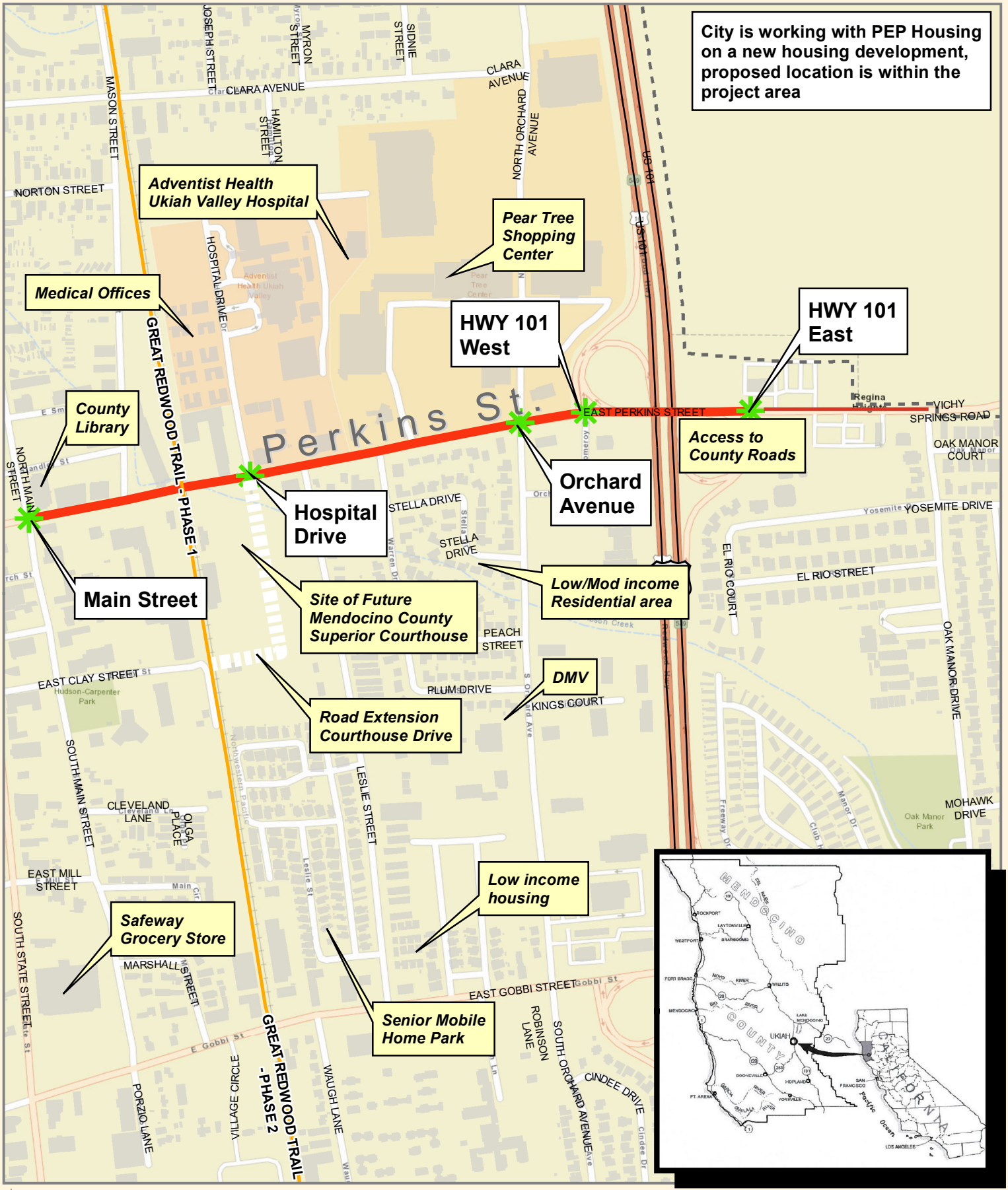
City of Ukiah East Perkins Multimodal Transportation Plan

25/26 Sustainable Communities Competitive

Grant Application

PROJECT LOCATION MAP

Attachment 2



City of Ukiah - Multimodal Transportation Improvement Plan

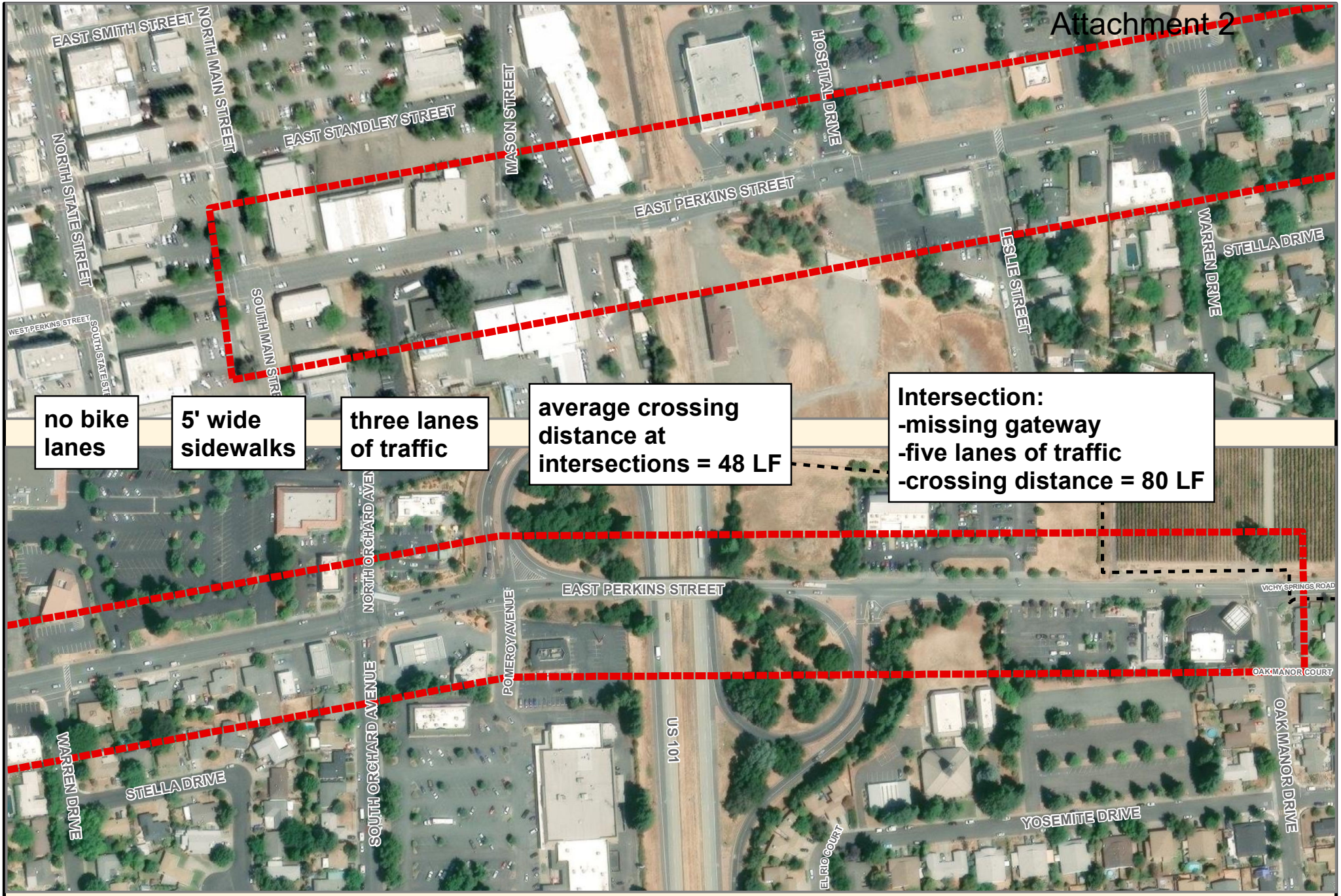
N

0 625 1,250 2,500 Feet

This map is a guide. Every reasonable effort has been made to ensure the accuracy of the map and data provided. Parcel lines are not intended to represent surveyed data.

Document Path: Q:\Stricklin, Andrew\GIS Maps\GIS\Projects\Grants\Project Location Map - Perkins Roundabout.mxd

City of Ukiah Public Works



Project Limits: East Perkins Street

This map is a guide. Every reasonable effort has been made to ensure the accuracy of the map and data provided. Parcel lines are not intended to represent surveyed data.

Document Path: Q:\Stricklin, Andrew\GIS Maps\GIS\Projects\Grants\Project Limits - Perkins Roundabout.mxd

0 320 640 Feet

N

City of Ukiah ENGINEERING

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Map of Existing Bicycle Facilities in Ukiah

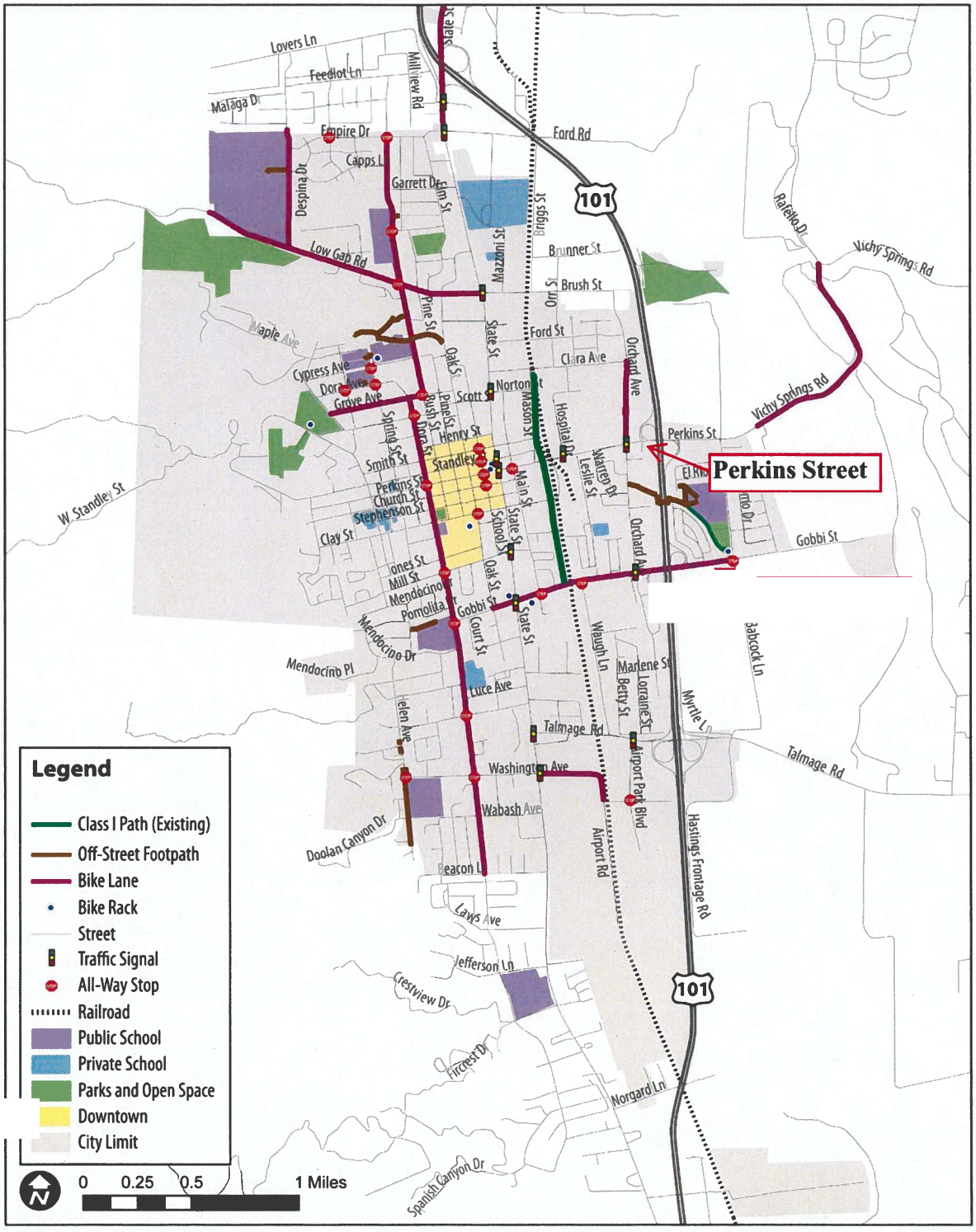
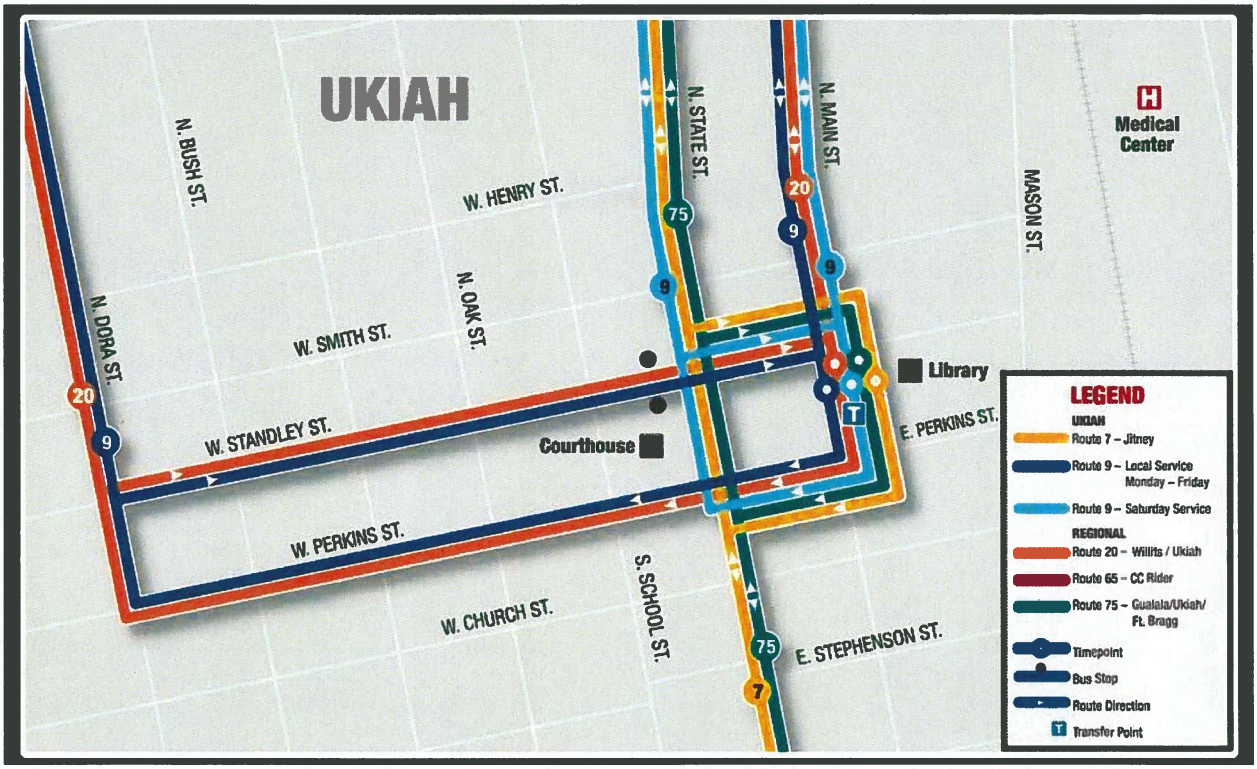


Figure 2: Existing Bicycle Facilities

City of Ukiah East Perkins & East Gobbi Streets
Multimodal Transportation Plan
Map of transit routes in the downtown area of Ukiah, CA



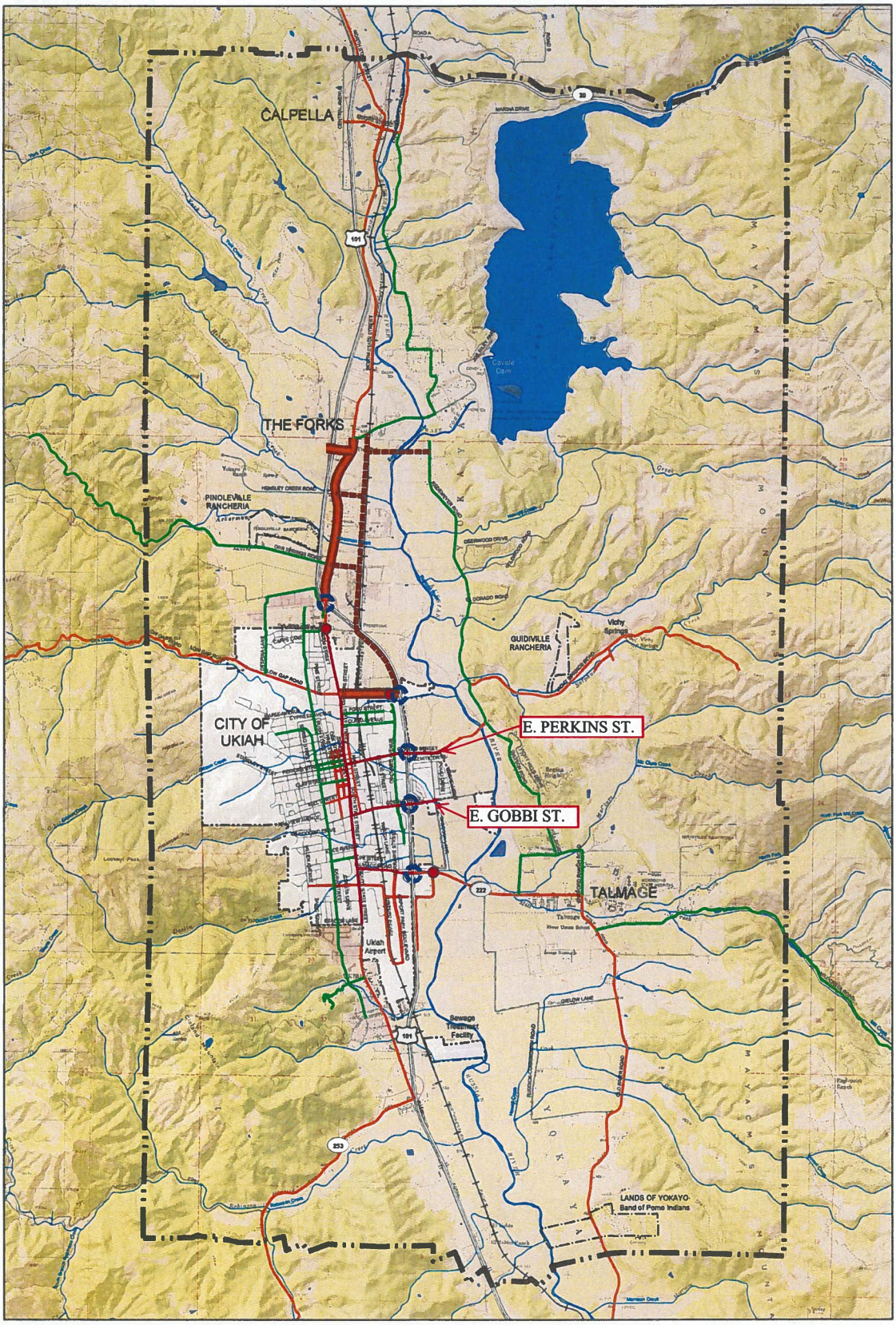


Figure 5.1 Existing and Proposed Conceptual Road Network

Source: Mendocino County Planning & Building Services, Council of Government & Mendocino County Department of Transportation August 2011

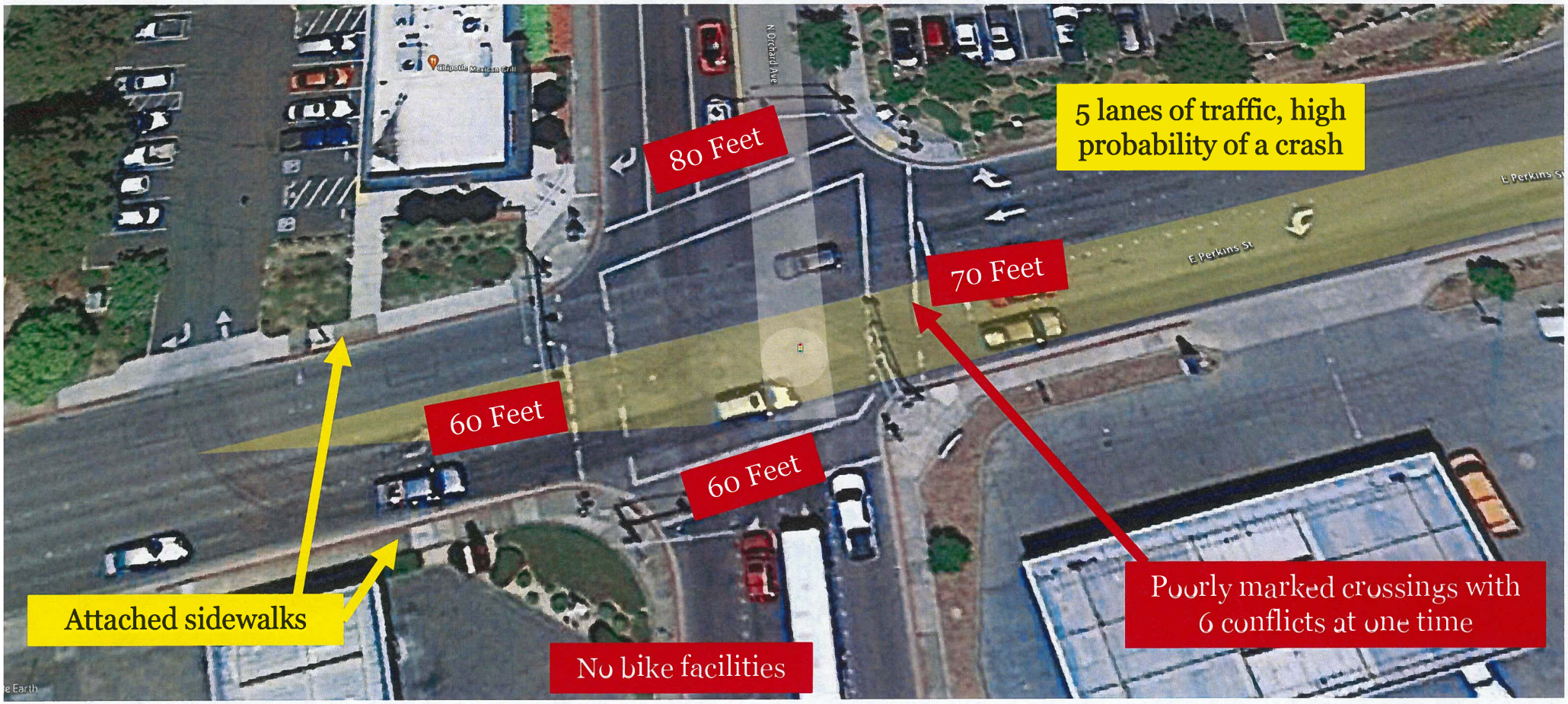
Existing Conditions

City of Ukiah East Perkins Multimodal Transportation Plan

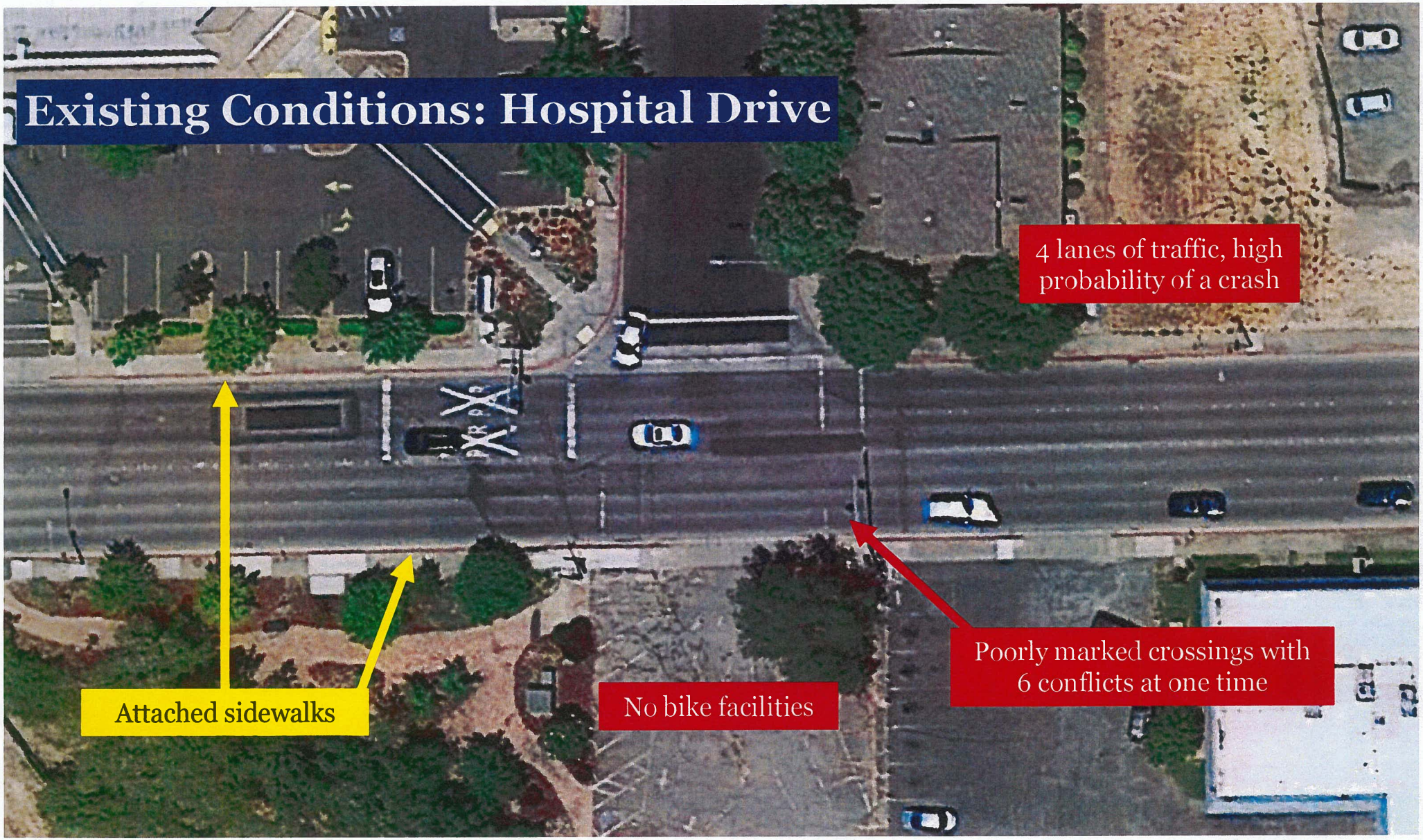
25/26 Sustainable Communities Competitive

Grant Application

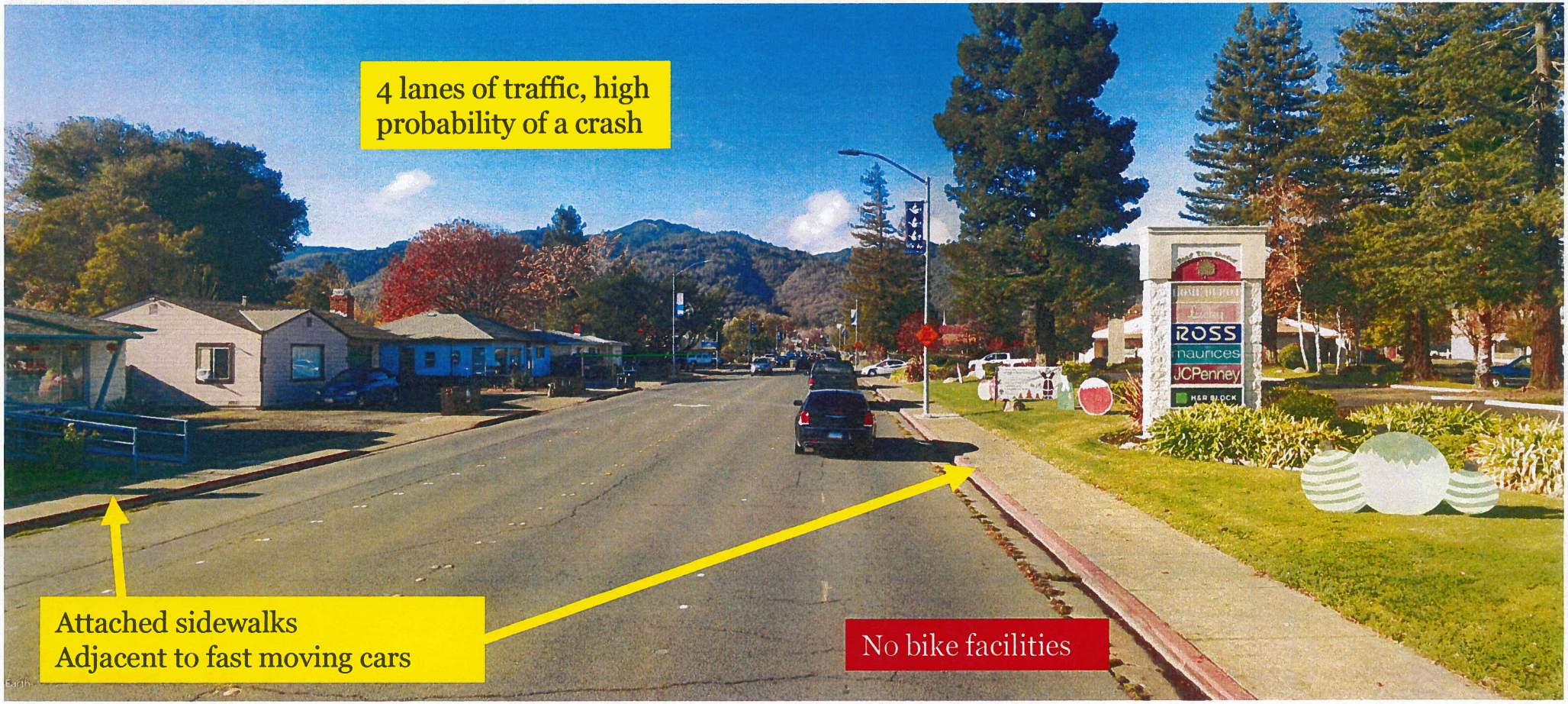
Existing Conditions: Perkins at Orchard



Perkins Today


Existing Conditions: Hospital Drive
4 lanes of traffic, high probability of a crash
Attached sidewalks
No bike facilities
Poorly marked crossings with 6 conflicts at one time

Perkins Today



Letters of Support

East Perkins Multimodal Transportation Plan

25/26 Sustainable Communities Competitive Grant Application

STATE CAPITOL
P.O. BOX 942849
SACRAMENTO, CA 94249-0002
(916) 319-2002
FAX (916) 319-2102

Assembly
California Legislature

CHRIS ROGERS
ASSEMBLYMEMBER, SECOND DISTRICT

January 22, 2025

Tanisha Taylor, Executive Director
California Department of Transportation
P.O. Box 942873
Sacramento, CA 94273-0001

Re: Letter of Support for Caltrans Sustainable Communities Transportation Planning Grant
"East Perkins Multimodal Transportation Improvement Plan"

Dear Director Taylor,

As the Assemblymember representing Mendocino County, I am pleased to support the City of Ukiah's application for a Caltrans Sustainable Communities Transportation Planning Grant application for the "East Perkins Street Multimodal Transportation Improvement Plan."

The proposed plan will identify and propose multimodal improvements to East Perkins Street, an arterial corridor connecting downtown to U.S. Highway 101. This plan, when implemented, will result in a safer, more functional, and aesthetically improved east-west transportation corridor in Ukiah.

Improving travel facilities for all travel modes – transit, vehicles, bicycles, and pedestrians– will promote active transportation and lead to an improved quality of life for all, especially members of underserved communities and those without access to motorized transportation.

I offer this project my enthusiastic support and encourage you to give this application your full consideration. Please feel free to contact me at 707-576-2526 if you have any questions or require additional information.

Sincerely,

Chris Rogers

CHRIS ROGERS
Assemblymember, 2nd District

CR:mb

Printed on Recycled Paper

January 5, 2025

Mr. Sage Sangiacomo, City Manager
City of Ukiah
300 Seminary Avenue
Ukiah, CA 95482

Re: Letter of Support for Caltrans Sustainable Communities Transportation Planning Grant Application for the "East Perkins Street Multimodal Transportation Plan"

Dear Mr. Sangiacomo,

Blue Zones Project Mendocino County is pleased to support the City of Ukiah's application for a Caltrans Sustainable Communities Transportation Planning Grant application for the "East Perkins Street Multimodal Transportation Improvement Plan."

The proposed plan will identify and propose multimodal improvements to East Perkins Street, an arterial corridor connecting the downtown district to U.S. Highway 101. This plan, when implemented, will result in a safer, more functional, and aesthetically improved east-west transportation corridor in the City of Ukiah.

Improving travel facilities for all travel modes – transit, vehicles, bicycles, and pedestrians– will promote active transportation and lead to an improved quality of life for all, especially members of underserved communities and those without access to motorized transportation.

We are pleased to offer strong support for this important application.

Sincerely,

Tina Tyler-O'Shea
Tina Tyler-O'Shea
Executive Director
Tina@bluezones.com

Lucy Bartholomew
Lucy Bartholomew
Public Policy Advocate
Lucy@bluezones.com

MENDOCINO TRANSIT AUTHORITY

December 30, 2024

Mr. Sage Sangiacomo, City Manager
City of Ukiah
300 Seminary Avenue
Ukiah, CA 95482

Re: Letter of Support for Caltrans Sustainable Communities Transportation Planning Grant Application for the "East Perkins Multimodal Transportation Improvement Plan"

Dear Mr. Sangiacomo,

Mendocino Transit Authority (MTA) pleased to support the City of Ukiah's application for a Caltrans Sustainable Communities Transportation Planning Grant application for the "East Perkins Street Multimodal Transportation Improvement Plan."

The proposed plan will identify and propose multimodal improvements to East Perkins Street, an arterial corridor connecting the downtown district to U.S. Highway 101. This plan, when implemented, will result in a safer, more functional, and aesthetically improved east-west transportation corridor in the City of Ukiah.

Improving travel facilities for all travel modes – transit, vehicles, bicycles, and pedestrians– will promote active transportation and lead to an improved quality of life for all, especially members of underserved communities and those without access to motorized transportation.

I am pleased to offer my strong support for this important application.

Sincerely,

Jacob King
Executive Director

Adventist Health Howard Memorial
1 Marcela Drive I Willits, CA 95490

Adventist Health Mendocino Coast
700 River Drive I Fort Bragg, CA 95437

Adventist Health Ukiah Valley
275 Hospital Drive I Ukiah, CA 95482

December 16, 2024

Mr. Sage Sangiacomo, City Manager
City of Ukiah
300 Seminary Avenue
Ukiah, CA 95482

RE: Letter of Support for Caltrans Sustainable Communities Transportation Planning Grant Application for the "East Perkins Multimodal Transportation Improvement Plan"

Dear Mr. Sangiacomo,

Adventist Health Ukiah Valley is proud to support the City of Ukiah in its application for the Caltrans Sustainable Communities Transportation Planning Grant for the "East Perkins Street Multimodal Transportation Improvement Plan."

This proposed initiative aims to identify and recommend multimodal enhancements to East Perkins Street, a vital arterial corridor linking the downtown district to U.S. Highway 101. Upon implementation, the plan is expected to deliver a safer, more efficient, and visually enhanced east-west transportation corridor within the City of Ukiah.

By improving facilities for all modes of travel—transit, vehicles, bicycles, and pedestrians—the plan will encourage active transportation, foster inclusivity, and elevate the overall quality of life, particularly for underserved communities and individuals without access to motorized transportation.

We are pleased to extend our strong support for this critical application.

Thank you,

Eric Stevens
President, Northern California Network

ES/dgb

MAUREEN MULHEREN
Supervisor
Second District

OFFICE PHONE: (707) 463-4221
DIRECT LINE: (707) 391-3664
OFFICE FAX: (707) 463-7237

MAILING ADDRESS:
501 Low Gap Road, Room 1010
Ukiah, CA 95482

COUNTY OF MENDOCINO
BOARD OF SUPERVISORS
501 Low Gap Road • Room 1010
Ukiah, California 95482

January 10, 2025

Tanisha Taylor, Executive Director
California Department of Transportation
P.O. Box 942873
Sacramento, CA 94273-0001

Re: Letter of Support for Caltrans Sustainable Communities Transportation Planning GrantApplication for the "East Perkins Street Multimodal Transportation Improvement Plan"

Dear Director Taylor,

I am writing to express support for the City of Ukiah's application for a Caltrans Sustainable Communities Transportation Planning Grant application for the "East Perkins Street Multimodal Transportation Plan."

It is my understanding that the proposed plan will identify and recommend multi-modal improvements to East Perkins Street, which acts as a major corridor connecting the downtown district to U.S. Highway 101. This plan, when implemented, will result in safer, more functional, and aesthetically improved, east-west transportation corridor in the City of Ukiah.

Improving travel facilities for all travel modes –vehicles, bicycles, and pedestrians– will promote active transportation and lead to an improved quality of life for all, especially members of underserved communities and those without access to motorized transportation.

I am pleased to offer my strong support for this important application.

Respectfully,

MO MULHEREN
Mendocino County Second District Supervisor

Mendocino County Planning Commission
Mendocino County Climate Action Committee

January 5, 2025

Mr. Sage Sangiacomo, City Manager
City of Ukiah
300 Seminary Avenue
Ukiah, CA 95482

Re: Letter of Support for Caltrans Sustainable Communities Transportation Planning Grant Application for the "East Perkins Street Multimodal Transportation Improvement Plan"

Dear Mr. Sangiacomo,

As a Mendocino County Planning Commissioner and former Chair of the Mendocino County Climate Action Committee, I want to offer my full support for the City of Ukiah's application for a Caltrans Sustainable Communities Transportation Planning Grant application for the "East Perkins Street Multimodal Transportation Improvement Plan."

The proposed plan is definitely needed and will be used to identify and propose multimodal improvements to East Perkins Street, a primary east-west corridor, connecting Downtown Ukiah to U.S. Highway 101. After implementation, we will have a safer, more functional, and aesthetically improved east-west transportation corridor in the City of Ukiah.

Improving travel facilities for all travel modes – vehicles, bicycles, and pedestrians– will reduce greenhouse gas emissions result in smart growth and help improve the urban form of Ukiah. .

Sincerely,

Marie Jones
Mendocino County Planning Commissioner
Former Chair, Mendocino County Climate Action Committee
Executive Director of Jug Handle Nature Center

January 17, 2025

Mr. Sage Sangiacomo
City Manager
City of Ukiah
300 Seminary Avenue
Ukiah, CA 95482

Re: Letter of Support for Caltrans Sustainable Communities Transportation Planning Grant Application for the "East Perkins Street Multimodal Transportation Plan"

Dear Mr. Sangiacomo,

The Greater Ukiah Business and Tourism Alliance is pleased to support the City of Ukiah's application for a Caltrans Sustainable Communities Transportation Planning Grant application for the "East Perkins Street Multimodal Transportation Plan."

The proposed plan will identify and propose multimodal improvements to East Perkins Street, an arterial corridor connecting the downtown district to U.S. Highway 101. This plan, when implemented, will result in a safer, more functional, and aesthetically improved east-west transportation corridor in the City of Ukiah.

Improving travel facilities for all travel modes – transit, vehicles, bicycles, and pedestrians– will promote active transportation and lead to an improved quality of life for all, especially members of underserved communities and those without access to motorized transportation.

I am pleased to offer my strong support for this important application.

Sincerely,

Katrina M. Kessen

Katrina M. Kessen, Executive Director
707.262.2092 | katrina@discoverukiah.com

Climate Action Mendocino

806 W. Mill St., Ukiah, CA 95482

December 20, 2024

Mr. Sage Sangiacomo, City Manager
City of Ukiah
300 Seminary Avenue
Ukiah, CA 95482

Re: Letter of Support for Caltrans Sustainable Communities Transportation Planning Grant Application for the "East Perkins Multimodal Transportation Improvement Plan"

Dear Mr. Sangiacomo,

Climate Action Mendocino eagerly supports the City of Ukiah's application for a Caltrans Sustainable Communities Transportation Planning Grant application for the "East Perkins Street Multimodal Transportation Improvement Plan".

The proposed plan will identify and suggest multimodal improvements to East Perkins Street, our arterial corridor connecting Ukiah's downtown to U.S. Highway 101. We've all driven on Perkins Street and have been slowed by traffic jams at various times of the day. This plan, when implemented, will result in a safer, more functional and aesthetically improved east-west transportation corridor in the City of Ukiah.

Streets that are efficient for cars and also where pedestrians and cyclists have their own space to travel for safety are streets where everyone can enjoy the beauty of the street's landscaping and, importantly, promote active transportation.

Improving travel facilities for all travel modes will lead to an improved quality of life for everyone, especially members of the underserved communities and those without access to motorized transportation, enhancing the quality of life for everyone in our city.

Climate Action Mendocino is very much in favor of the Caltrans Sustainable Communities Transportation Planning Grant Application for the "East Perkins Street Multimodal Transportation Improvement Plan". We are definitely looking forward to a much more safe access to Ukiah for residents and visitors.

Most sincerely,

Eileen Mitro

Eileen Mitro
Climate Action Mendocino

December 23, 2024

Mr. Sage Sangiacomo, City Manager
City of Ukiah
300 Seminary Avenue
Ukiah, CA 95482

Re: Letter of Support for Caltrans Sustainable Communities Transportation Planning Grant Application for the "East Perkins Street Multimodal Transportation Improvement Plan"

Dear Mr. Sangiacomo,

North Coast Opportunities and Walk and Bike Mendocino are pleased to support the City of Ukiah's application for a Caltrans Sustainable Communities Transportation Planning Grant application for the "East Perkins Street Multimodal Transportation Plan."

The proposed plan will identify and propose multimodal improvements to East Perkins Street, a primary corridor connecting the downtown district to U.S. Highway 101. This plan, when implemented, will result in safer, more functional, and aesthetically improved east-west transportation corridors in the City of Ukiah.

Improving travel facilities for all travel modes – vehicles, bicycles, and pedestrians– will promote active transportation and lead to an improved quality of life for all, especially members of underserved communities and those without access to motorized transportation.

Sincerely,

Radhika Misri
Project Manager
North Coast Opportunities/Walk and Bike Mendocino

DATA

City of Ukiah East Perkins Multimodal Transportation Plan

25/26 Sustainable Communities Competitive

Grant Application

US. Census Data

California

All | Tables | Maps | Charts | Profiles | Pages

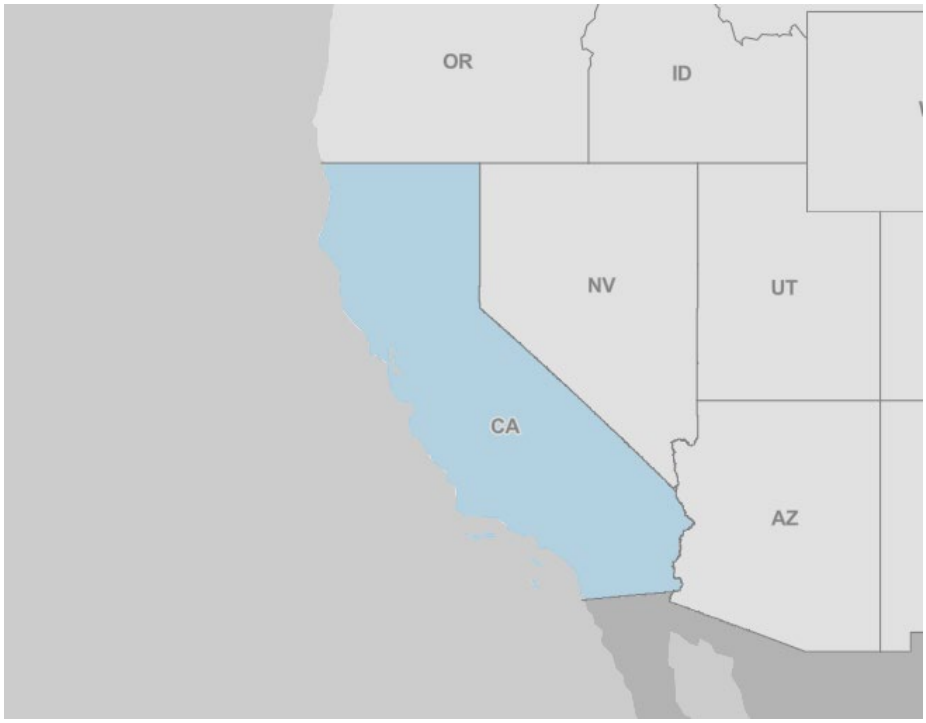
B19013 | Median Household Income in the Past 12 Months (in 2023 Inflation-Adjusted Dollars)

American Community Survey | Universe: Households | 2023: ACS 1-Year Estimates Detailed Tables

Notes | Geos | Topics | Codes | Dataset | Year | Columns

Please note that American Community Survey 1-Year estimat

Label	California	
	Estimate	Margin of Error
Median household income in the past 12 months (in 2023 inflation-adjusted dollars)	95,521	±611



Ukiah

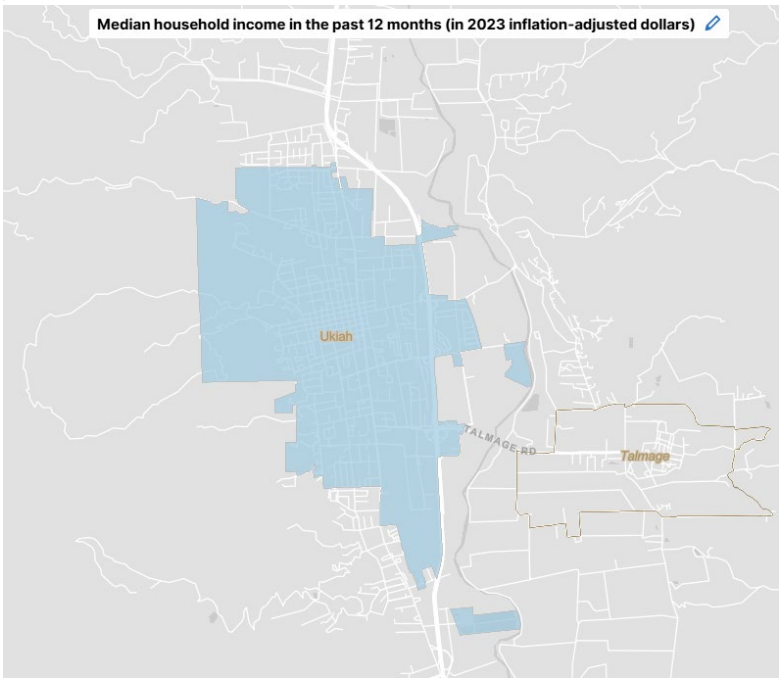
MHI = 70% of State MHI

B19013 | Median Household Income in the Past 12 Months (in 2023 Inflation-Adjusted Dollars)

American Community Survey | Universe: Households | 2023: ACS 5-Year Estimates Detailed Tables

Notes | Geos | Topics | Codes | Dataset | Year | Columns

Label	Ukiah city, California	
	Estimate	Margin of Error
Median household income in the past 12 months (in 2023 inflation-adjusted dollars)	67,122	±4,775



Census Block Group 115.02.1

MHI=68% of State MHI

Latino: 49%

B19013 | Median Household Income in the Past 12 Months (in 2023 Inflation-Adjusted Dollars)

American Community Survey | Universe: Households | 2023: ACS 5-Year Estimates Detailed Tables

Notes | Geos | Topics | Codes | Dataset | Year | Columns

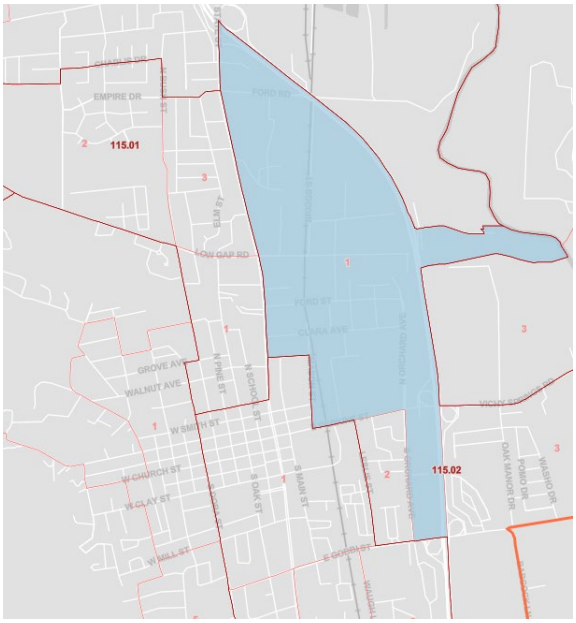
Label	Block Group 1; Census Tract 115.02; Mendocino County; California	
	Estimate	Margin of Error
Median household income in the past 12 months (in 2023 inflation-adjusted dollars)	65,278	±23,699

P9 | HISPANIC OR LATINO, AND NOT HISPANIC OR LATINO BY RACE

Decennial Census | Universe: Total population | 2020: DEC Demographic and Housing Characteristics

Notes | Geos | Topics | Codes | Year | Columns

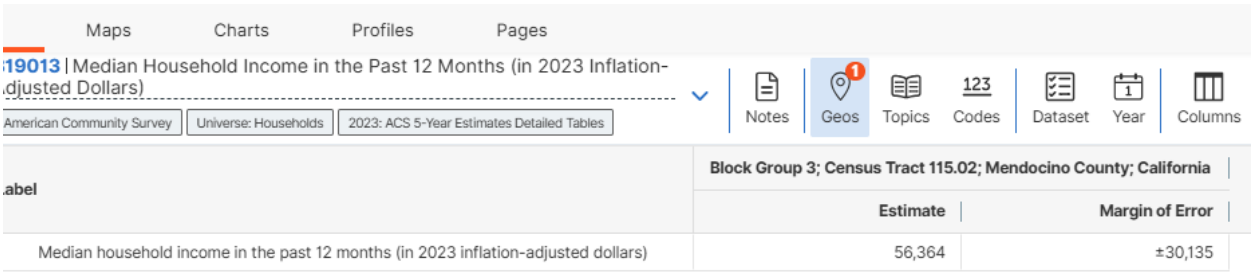
Label	Block Group 1; Census Tract 115.02; ...
Total:	1,742
Hispanic or Latino	863
Not Hispanic or Latino:	879

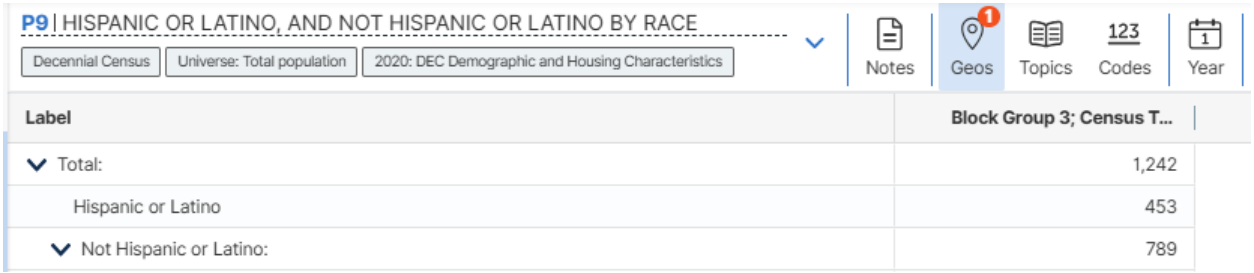


Census Block Group 115.02.3

MHI=59% of State MHI

Latino population: 36%





Census Tract 116.01.1

MHI=59% of State MHI

Latino=31%

B19013 | Median Household Income in the Past 12 Months (in 2023 Inflation-Adjusted Dollars)

American Community Survey | Universe: Households | 2023: ACS 5-Year Estimates Detailed Tables

Notes | Geos | Topics | Codes | Dataset | Year | Columns | Transp

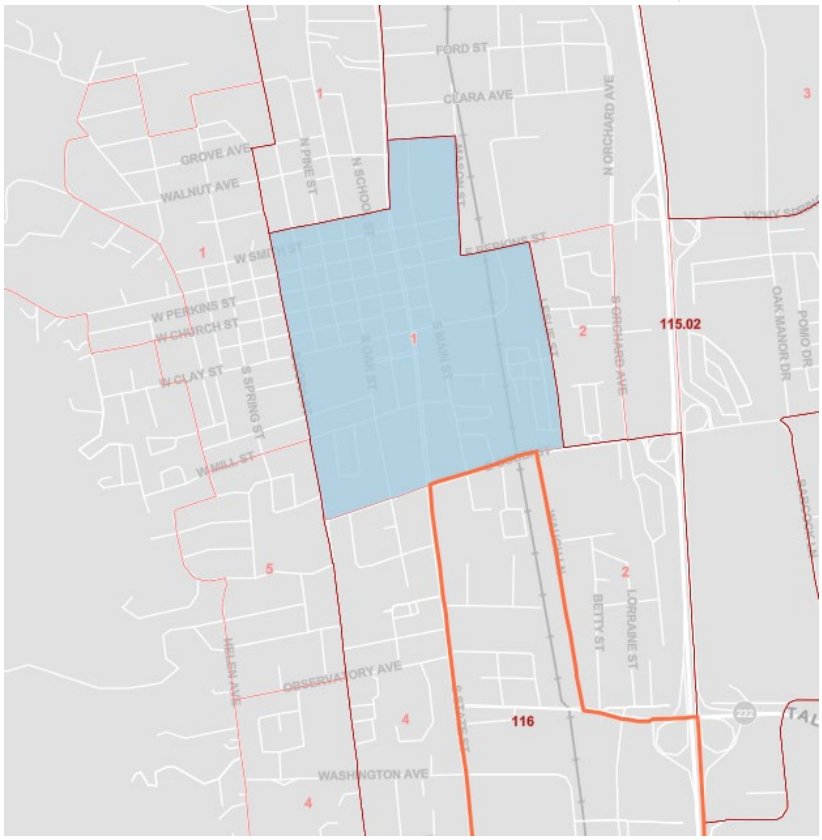
Label	Block Group 1; Census Tract 116; Mendocino County; California		Ukiah city
	Estimate	Margin of Error	
Median household income in the past 12 months (in 2023 inflation-adjusted dollars)	56,186	±6,596	

P9 | HISPANIC OR LATINO, AND NOT HISPANIC OR LATINO BY RACE

Decennial Census | Universe: Total population | 2020: DEC Demographic and Housing Characteristics

Notes | Geos | Topics | Codes | Dataset

Label	Block Group 1; Census Tr...
Total:	1,513
Hispanic or Latino	474
Not Hispanic or Latino:	1,039



Census Block Group 115.02.2

Income data not available

Latino population: 36%

B19013 | Median Household Income in the Past 12 Months (in 2023 Inflation-Adjusted Dollars)

American Community Survey | Universe: Households | 2023: ACS 5-Year Estimates Detailed Tables

Notes | Geos | Topics | Codes | Dataset | Year | Columns

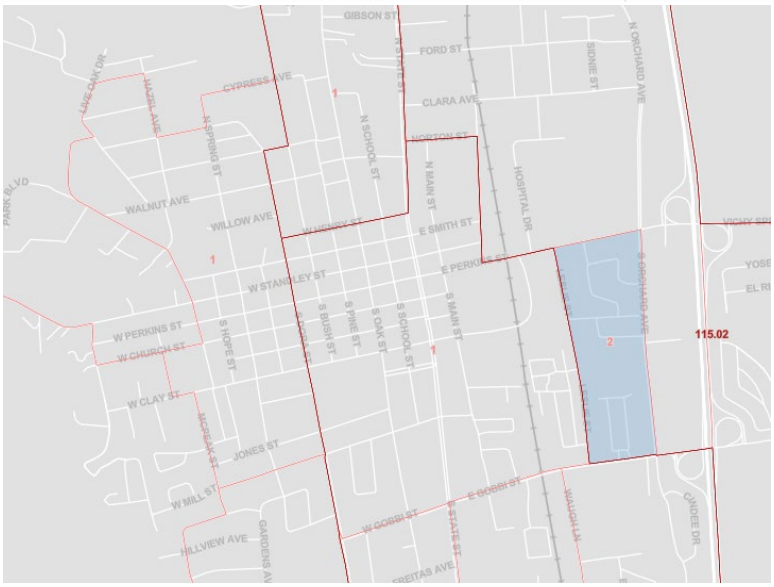
Label	Block Group 2; Census Tract 115.02; Mendocino County; California	
	Estimate	Margin of Error
Median household income in the past 12 months (in 2023 inflation-adjusted dollars)	-	**

P9 | HISPANIC OR LATINO, AND NOT HISPANIC OR LATINO BY RACE

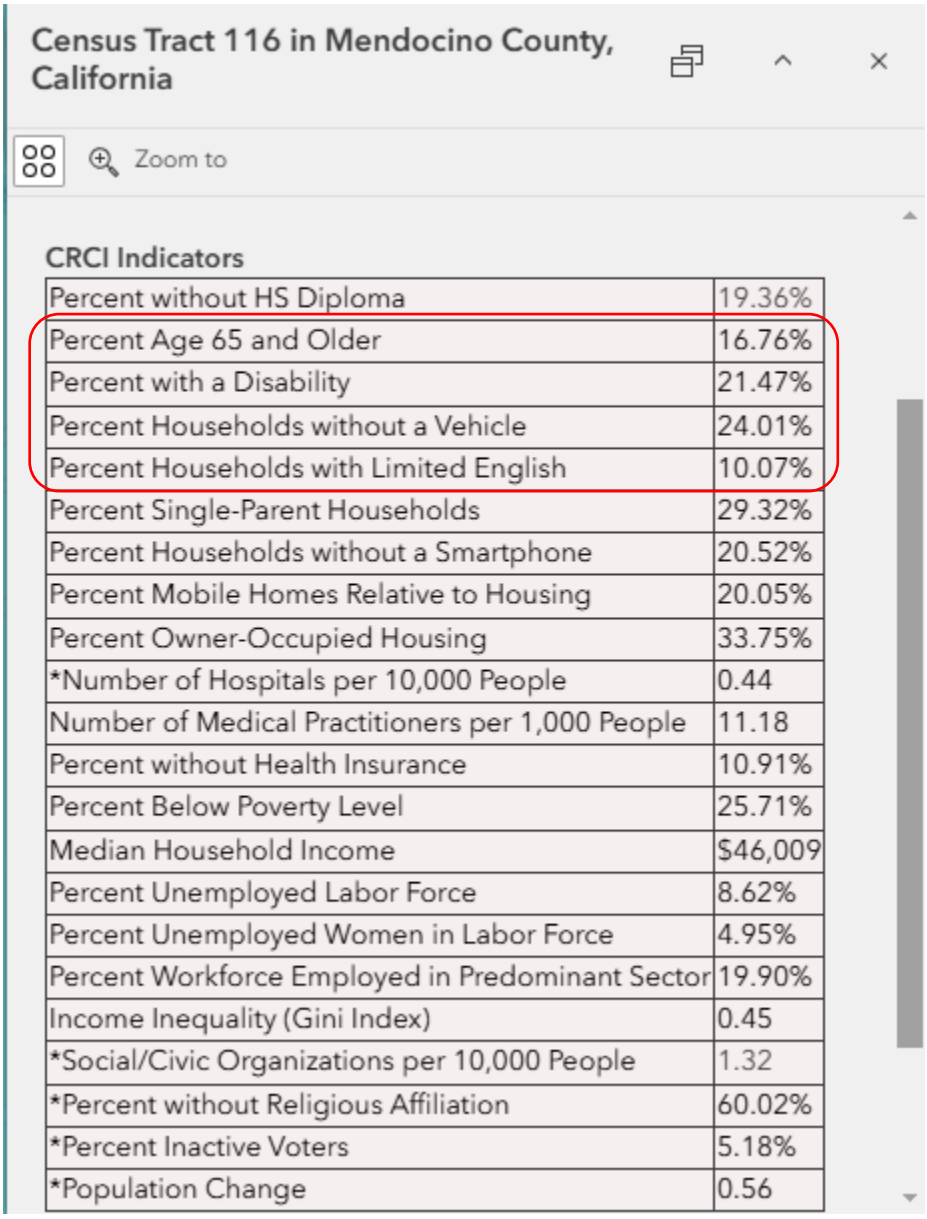
Decennial Census | Universe: Total population | 2020: DEC Demographic and Housing Characteristics

Notes | Geos | Topics | Codes | Year | Col

Label	Block Group 2; Census T...
Total:	612
Hispanic or Latino	222
Not Hispanic or Latino:	390
Population of one race:	363



FEMA Resilience Analysis and Planning Tool(RAPT)

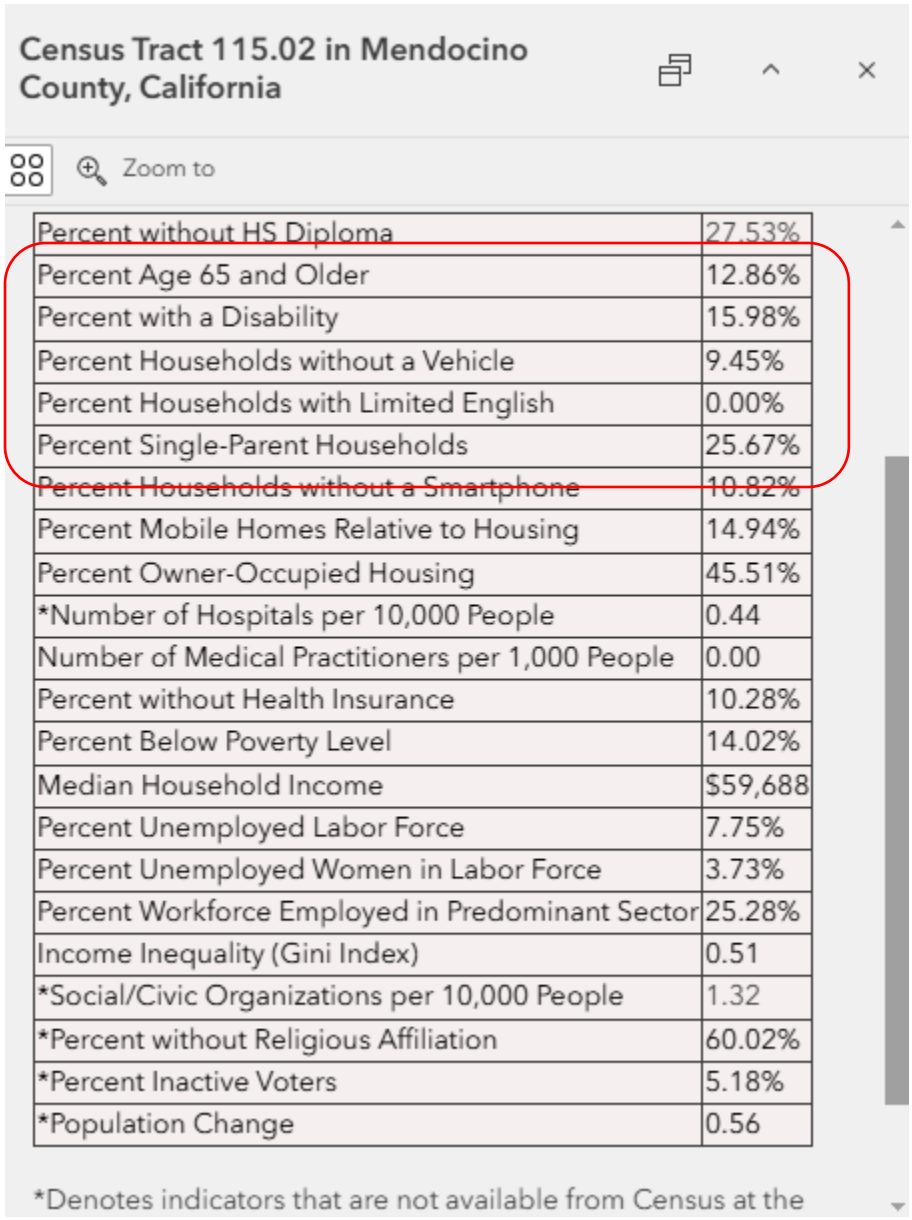


Census Tract 116 in Mendocino County, California

Zoom to

CRCI Indicators

Percent without HS Diploma	19.36%
Percent Age 65 and Older	16.76%
Percent with a Disability	21.47%
Percent Households without a Vehicle	24.01%
Percent Households with Limited English	10.07%
Percent Single-Parent Households	29.32%
Percent Households without a Smartphone	20.52%
Percent Mobile Homes Relative to Housing	20.05%
Percent Owner-Occupied Housing	33.75%
*Number of Hospitals per 10,000 People	0.44
Number of Medical Practitioners per 1,000 People	11.18
Percent without Health Insurance	10.91%
Percent Below Poverty Level	25.71%
Median Household Income	$46,009
Percent Unemployed Labor Force	8.62%
Percent Unemployed Women in Labor Force	4.95%
Percent Workforce Employed in Predominant Sector	19.90%
Income Inequality (Gini Index)	0.45
*Social/Civic Organizations per 10,000 People	1.32
*Percent without Religious Affiliation	60.02%
*Percent Inactive Voters	5.18%
*Population Change	0.56



Census Tract 115.02 in Mendocino County, California

Zoom to

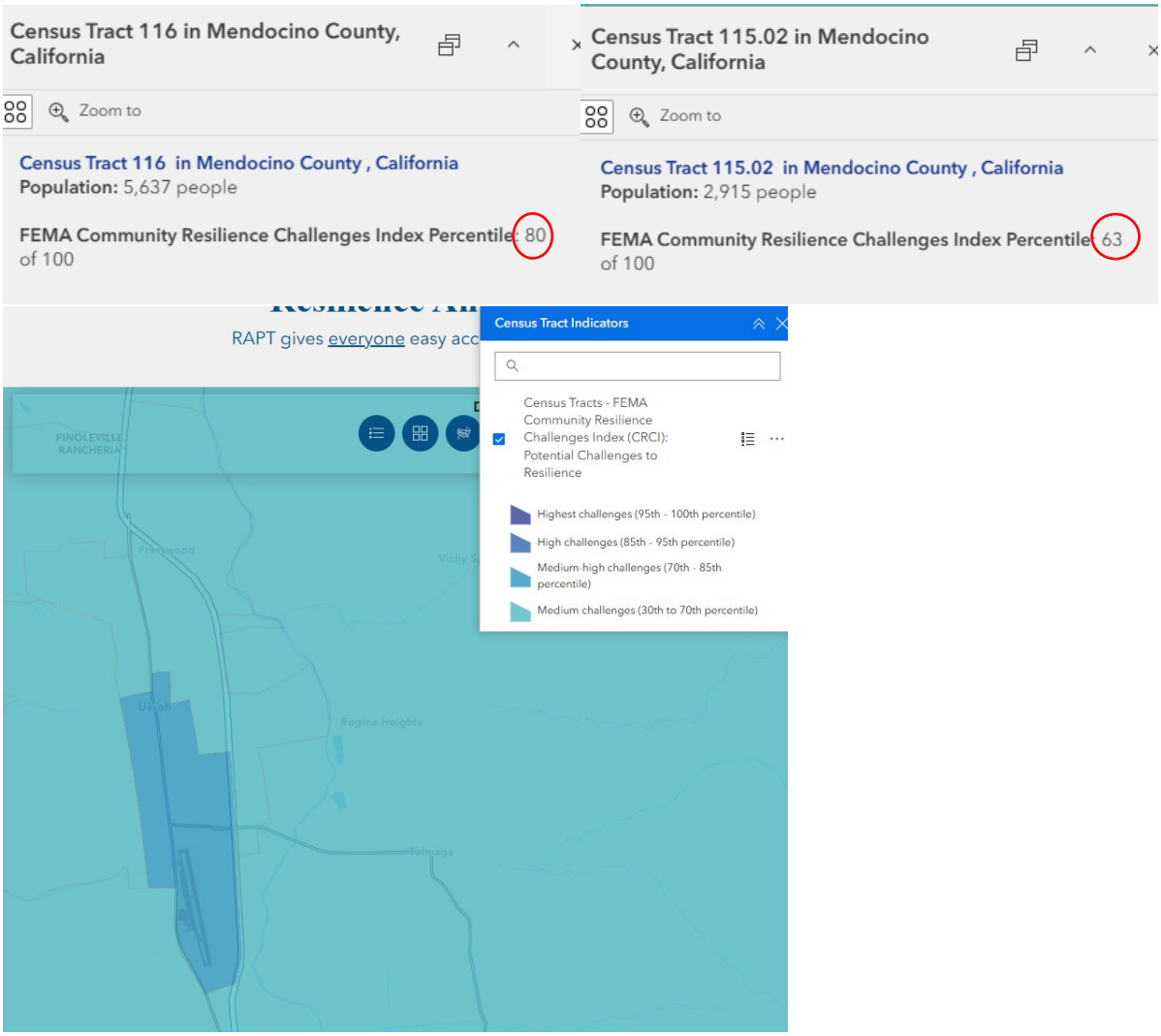
Percent without HS Diploma	27.53%
Percent Age 65 and Older	12.86%
Percent with a Disability	15.98%
Percent Households without a Vehicle	9.45%
Percent Households with Limited English	0.00%
Percent Single-Parent Households	25.67%
Percent Households without a Smartphone	10.82%
Percent Mobile Homes Relative to Housing	14.94%
Percent Owner-Occupied Housing	45.51%
*Number of Hospitals per 10,000 People	0.44
Number of Medical Practitioners per 1,000 People	0.00
Percent without Health Insurance	10.28%
Percent Below Poverty Level	14.02%
Median Household Income	$59,688
Percent Unemployed Labor Force	7.75%
Percent Unemployed Women in Labor Force	3.73%
Percent Workforce Employed in Predominant Sector	25.28%
Income Inequality (Gini Index)	0.51
*Social/Civic Organizations per 10,000 People	1.32
*Percent without Religious Affiliation	60.02%
*Percent Inactive Voters	5.18%
*Population Change	0.56

*Denotes indicators that are not available from Census at the

Climate Challenges

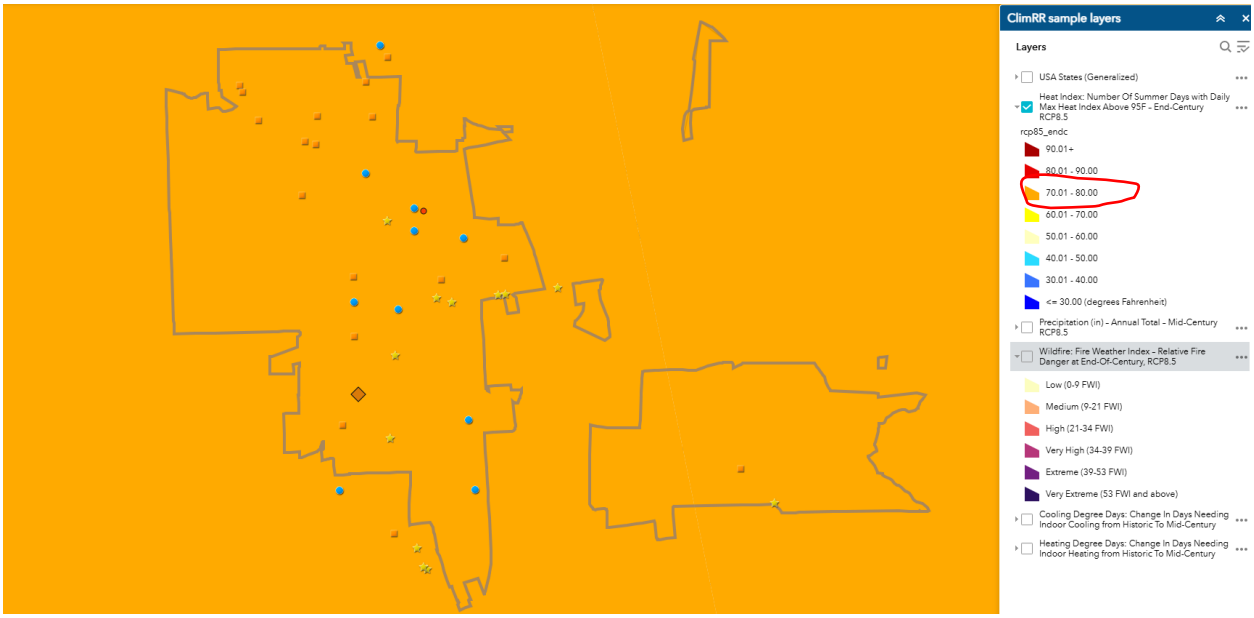
Census Block 115.02 ranks **63%** percentile for community resilience challenges

Census Block 116 ranks **80%** percentile for community resilience challenges



Heat Index: Number of Summer Days with Daily Mat Heat Index Above 95 – End of Century

RCP Rating 8.5, ranks **70-80th** percentile



Ukiah's Wildfire Danger Index at End of Century Ranks at **28.18 or "High"**

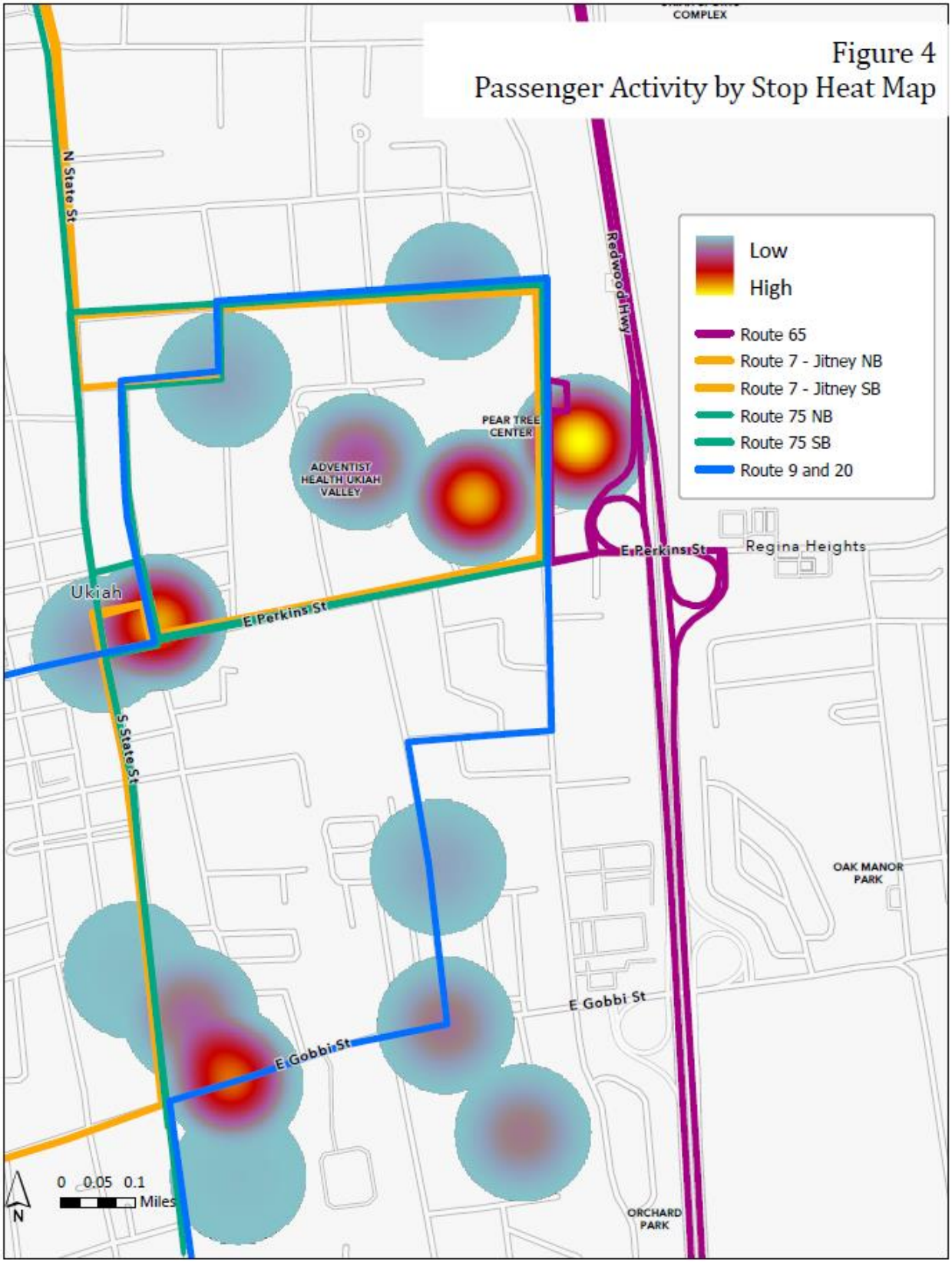


Figure 4
Passenger Activity by Stop Heat Map
Low
High
Route 65
Route 7 - Jitney NB
Route 7 - Jitney SB
Route 75 NB
Route 75 SB
Route 9 and 20
N State St
Redwood Hwy
PEAR TREE CENTER
ADVENTIST HEALTH UKIAH VALLEY
E Perkins St
Regina Heights
Ukiah
S State St
OAK MANOR PARK
E Gobbi St
ORCHARD PARK
0 0.05 0.1
Miles
N

High-Injury Locations

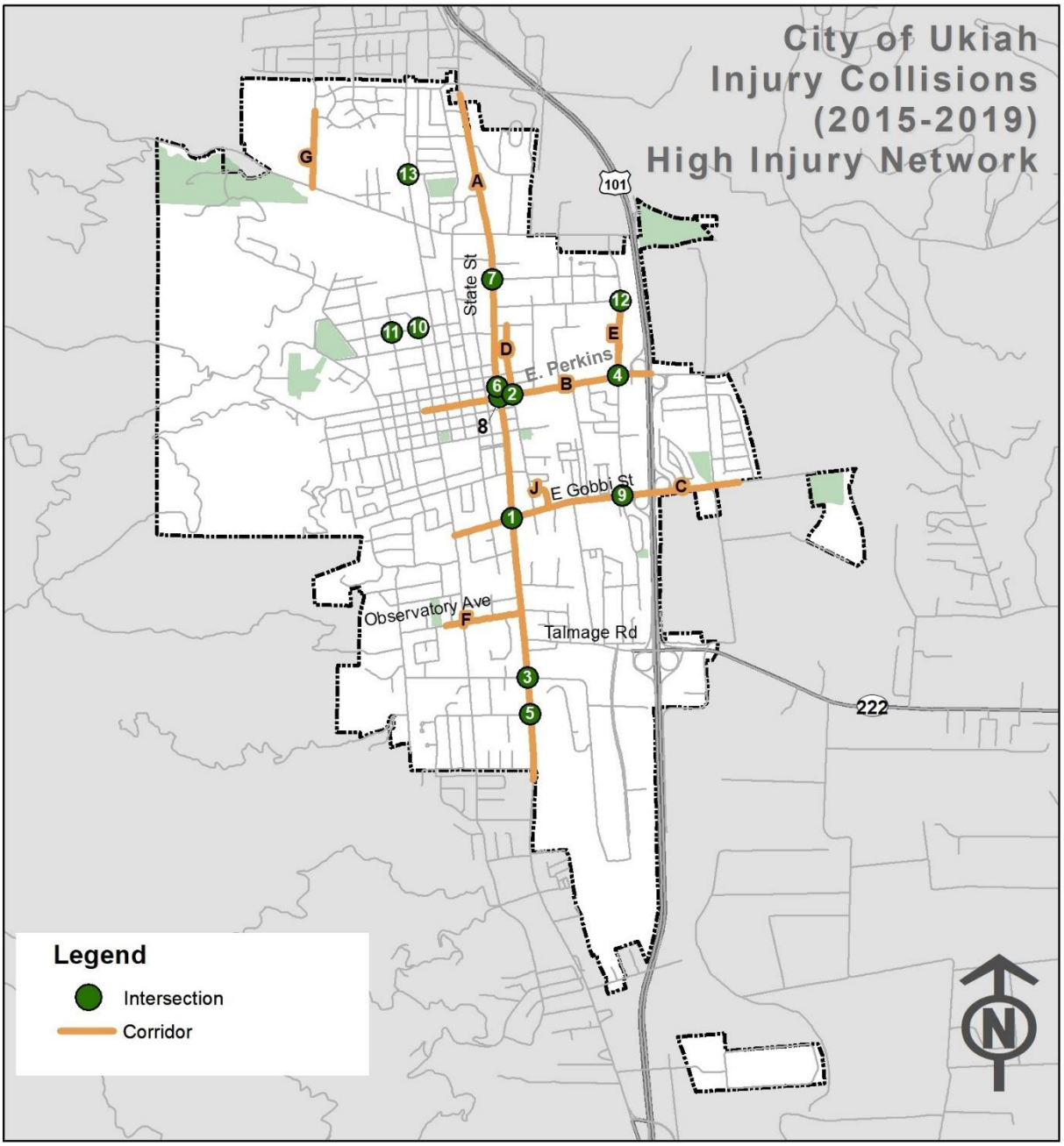
Following the detailed collision analysis, the next step was to identify the high-risk roadway segments and intersections in the City of Ukiah. The methodology for scoring the high injury locations is the same method used in the severity weight section.

Figure 34 shows the top eight high-collision roadway segments, and top 13 high-collision intersections based on 2015-2019 collision analysis.

Figure 35 shows the top eight high-collision roadway segments, and top 11 high-collision intersections based on 2020-2022 collision analysis.

For the purposes of the high collision network analysis, intersections include collisions that occurred within 250 feet of it and roadways include all collisions that occurred along the roadway except for collisions that occurred occur directly at an intersection, or collisions that occurred at a distance of zero feet from an intersection as per the SWITRS.

Figure 34. City of Ukiah High Injury Network (2015-2019)



High Injury Intersections (2015-2019)

Table 8 lists the most significant high-collision intersections identified in the 2015-2019 analysis.

Table 8. High Injury Intersections (2015-2019)

ID	Intersection	Total	KSI	Veh/ Ped	Hit Object	DUI	Unsafe Speed	Bike	EPDO Score
		Collisions							
1	Gobbi St and State St	5	2	2	0	0	1	1	358
2	Main St and Perkins St	2	2	3	0	1	0	0	330
3	Washington Ave and Hastings Ave and S State St	11	1	4	1	0	0	1	245
4	Perkins St and South Orchard Ave	7	1	3	0	0	4	1	206
5	Wabash Ave and State St	6	1	0	0	0	4	0	195
6	Standley St and State St	4	1	1	0	1	2	0	183
7	Ford Rd and State St	3	1	1	0	0	1	0	182
8	Perkins St and S State St	2	1	2	0	0	0	0	176
9	East Gobbi St and South Orchard Ave	2	1	1	0	0	0	1	171
10	Dora Ave and Grove Ave	1	1	0	1	0	0	0	165
11	Grove Ave and Spring St	1	1	0	0	0	0	1	165
12	Clara Ave and North Orchard Ave	1	1	0	0	1	0	0	165
13	Arlington and North Bush St	1	1	0	1	0	0	0	165

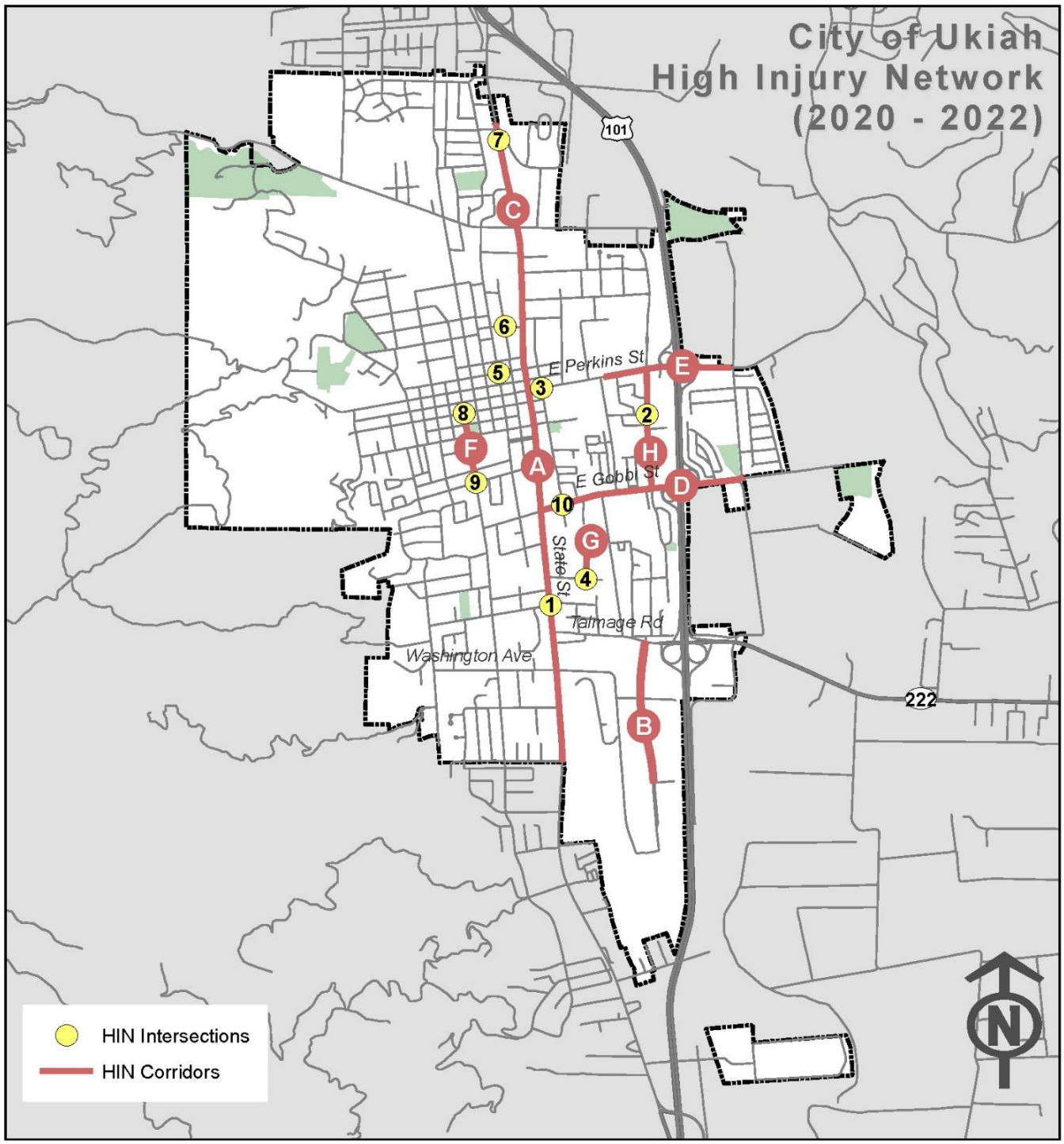
High Injury Corridors (2015-2019)

Table 8 lists the most significant high-collision roadway segments identified in the 2015-2019 analysis.

Table 9. High Injury Corridors (2015-2019)

ID	Corridors	Collisions							Length (miles)	EPDO Score
		Total	KSI	Ped	Hit Object	DUI	Unsafe Speed	Bike		
A	State St: Beacon Ln to Ford Rd	36	3	5	2	0	23	3	2.5	728
B	N Orchard Ave: Clara Ave to E Perkins St	4	2	1	0	0	1	2	0.3	342
C	Perkins St: Hortense St to Redwood Hwy SR 101	11	1	4	0	1	6	1	2.3	235
D	Gobbi St: S Dora St to Washo Dr	5	1	2	0	1	1	2	3.8	199
E	Main St: Norton St to E Perkins St	3	1	2	0	1	0	1	2.8	177
F	Observatory Ave: Marwen Dr to State St	3	1	1	1	0	1	0	0.5	177
G	Despina Dr: Capps Ln to Low Gap Rd	1	1	1	0	0	0	0	0.7	165
H	Marshall St: S Main St to E Gobbi St	1	1	0	1	1	0	0	0.12	165

Figure 35. City of Ukiah High Injury Network (2020-2022)



High Injury Intersections (2020-2022)

There are 11 intersections that were identified as high injury intersections for 2020-2022. A total of 12 KSI collisions occurred at these intersections. The intersection of South State Street and Observatory Avenue has the highest EPDO score. **Table 10** lists the most significant high-collision intersections identified in the 2020-2022 analysis.

Table 10. High Injury Intersections (2020-2022)

ID	Intersections	Total	Killed	Severe Injury	Pedestrian/ Bicycle	EPDO Score
1	S State St & Observatory Ave	6	0	2	2	359
2	S Orchard Ave & Peach St	2	0	1	1	176
3	N Main St and E Perkins St	2	0	1	1	171
4	N State St & Bricarelli Dr	2	0	1	0	171
5	Apple Ave & Cherry St	1	0	1	0	165
6	N Oak St & W Smith St	1	0	1	1	165
7	Scott St & N School St	1	0	1	1	165
8	N State St & Mazzoni St	1	0	1	1	165
9	S Dora St & W Church St	1	0	1	1	165
10	S Dora St & W Mill St	1	0	1	1	165
11	E Gobbi St & S Main St	1	0	1	0	165

High Injury Corridors

Eight corridors were identified as high injury corridors for 2020-2022. There was a total eight KSI collisions on these corridors. The corridor with the highest EPDO score is S State Street from Beacon Lane to W Perkins Street. **Table 11** lists the most significant high-collision roadway segments identified in 2020-2022 analysis.

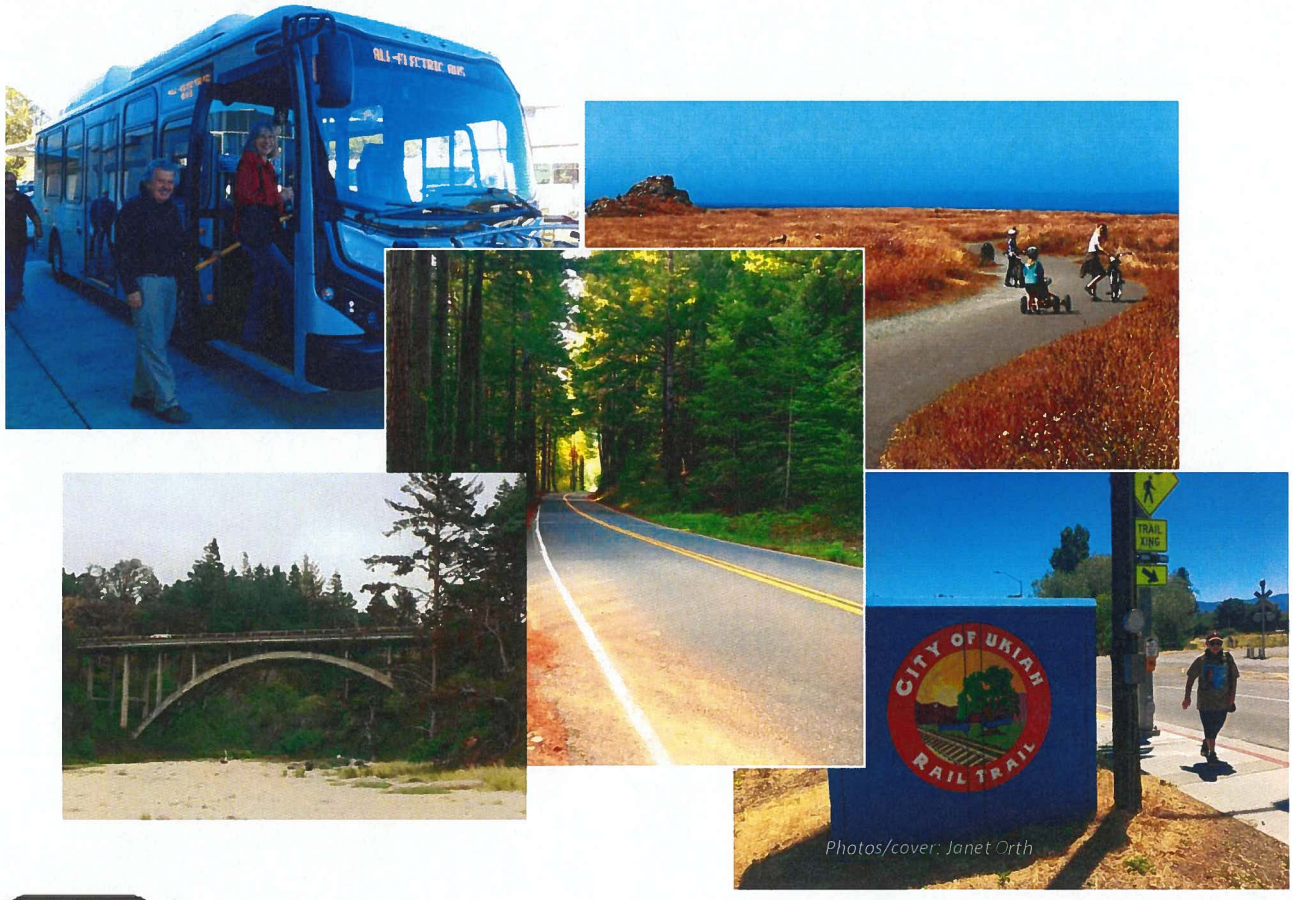
Table 11. High Injury Corridors (2020-2022)

ID	Corridors	Total Injury Collisions	Killed	Severe Injury	Pedestrian/Bicycle	Length (miles)	EPDO Score
A	S State St: Beacon Ln to W Perkins St	8	0	1	1	2.5	217
B	Airport Park Blvd: Talmage Rd to Entrance to Costco Warehouse	7	0	1	2	0.6	216
C	N State St: W Perkins St to Ukiah City Limit	7	0	1	2	1.1	211
D	E Gobbi St: S State St to Washo Dr	4	0	1	0	1.0	183
E	E Perkins St: S State St to Oak Manor Dr	4	0	1	0	0.8	183
F	S Dora: W Church St to W Mill St	2	0	1	1	0.3	171
G	Apple Ave: Entire length from Cherry St	1	0	1	0	0.1	165
H	S Orchard Ave: E Perkins to E Gobbi St	1	0	1	1	0.3	165

EXCERPTS FROM

Final
Adopted 2/7/2022

2022 MENDOCINO COUNTY REGIONAL TRANSPORTATION PLAN & ACTIVE TRANSPORTATION PLAN



Photos/cover: Janet Orth

MCOG

Prepared for:
Mendocino Council
of Governments

Prepared by:
Davey-Bates
Consulting

COMPLETE STREETS (CS)

Goal: Improve our public spaces so the street, road and transportation system meets the needs of all surface transportation modes, including vehicular, bicycle, pedestrian, and transit.

Objective CS 1: Incorporate bicycle, pedestrian, and transit improvements when planning roadway improvements, unless the roadway is exempt by law, or the project receives a specific waiver authorized through a local, public process, or for basic maintenance and rehabilitation activities.

Policy CS 1.1. Coordinate funding programs to provide multiple components of an infrastructure project when appropriate.

Policy CS 1.2. Seek funding sources for multiple modes of transportation.

Policy CS 1.3. Facilitate coordination between local transportation agencies and Mendocino Transit Authority.

Policy CS 1.4. Consider waivers in cases where environmental issues constrain improvement options, transit service is not planned or currently provided, or where the benefit/cost ratio of providing bike/pedestrian improvements is low (as would be expected in isolated rural areas).

Objective CS 2: Provide new bicycle, pedestrian and transit facilities on existing streets and roads where none exist.

Policy CS 2.1. Seek funding to fill gaps in bicycle and pedestrian facilities adjacent to roadways and provide bus stop improvements along fixed transit routes.

Objective CS 3: Encourage Caltrans to include complete street components on transportation projects in Mendocino County, where feasible.

Policy CS 3.1. Identify non-motorized projects on State highways that serve as "Main Street" in rural communities, for funding through Caltrans' State Highway Operation and Protection Program (SHOPP).

Policy CS 3.2. Nominate eligible non-motorized projects for inclusion in Caltrans Active Transportation (CAT) Plan.

GOODS MOVEMENT (GM)

Goal: A transportation system allowing the efficient free flow of goods and freight, including agricultural goods, within and through the region.

Objective GM 1: Develop State Highway routes and local routes capable of efficiently moving goods and agricultural products to, from, and through the Region.

Policy GM 1.1. Prioritize State Highway and local road projects that improve connectivity and overall mobility, and increase efficiency with which freight can travel throughout the region.

Policy GM 1.2. Encourage local agencies to consider the need for on-site truck parking, as appropriate, for developments that will generate significant goods movement (agriculture, manufacturing, industrial, large retail) to ensure truck drivers' safety and reduce idling.

Policy GM 1.3. Support State efforts to develop a Surface Transportation Assistance Act (STAA) route to eliminate the only STAA gap between the Bay Area and Eureka. (Note: the

Policy SH 1.2. Seek funding for priority improvements identified on major corridors and interregional routes, including the consideration of Regional Improvement Program (RIP) programming and pursuit of other State and Federal funding sources.

Policy SH 1.3. Identify, prioritize, and seek funding for access improvements (interchanges & intersections) to the Principal Arterial System.

Policy SH 1.4. Consider funding participation in staged widening of two-lane segments of U. S. 101 south of Ukiah.

Objective SH 2: Provide a system of Minor Arterial Highways consistent with statewide needs and local priorities.

Policy SH 2.1. Encourage State funding for maintenance of Minor Arterial Highway segments within the County.

Policy SH 2.2. Coordinate with Caltrans to identify and program needed operational and safety improvements.

Policy SH 2.3. Consider local funding partnership to correct safety concerns as appropriate.

Objective SH 3: Provide safe traveling conditions on all State Highways within Mendocino County.

Policy SH 3.1. Prioritize projects that correct safety issues (particularly in locations with high accident rates) for support and funding consideration.

Policy SH 3.2. Continue to implement and maintain a system of motorist aid call boxes consistent with the Call Box Implementation Plan per MCOG's role as the Service Authority for Freeway Emergencies (SAFE) for Mendocino County.

Objective SH 4: Provide for efficient, free-flowing travel on all State Highways in Mendocino County.

Policy SH 4.1. Maintain a minimum Level of Service C on rural segments of the Principal Arterial System and a minimum Level of Service of D in "urbanized" areas as measured by the current Highway Capacity Manual.

Policy SH 4.2. Maintain a minimum Level of Service D on the "main line" at all interchanges and at-grade crossings on the state Highway System.

Policy SH 4.3. Consider a lower standard for Level of Service along segments of State Routes that serve as "Main Street" through communities.

Objective SH 5: Balance the needs for transportation improvements with quality of life for residents of and visitors to the region.

Policy SH 5.1. Consider context sensitive solutions when planning and designing highway improvements, particularly in communities where a State highway serves as "Main Street."

Policy SH 5.2. Consider "complete streets" strategies when planning major corridor improvements that include the needs of bicyclists, pedestrians, and transit users.

Policy SH 5.3. Pursue multiple funding sources (State Transportation Improvement Program - STIP, Active Transportation Program - ATP, State Highway Operation Protection Program - SHOPP) on corridor projects to fund multi-modal aspects of the project.

LOCAL STREETS & ROADS (LSR)

Goal: Provide a safe and efficient transportation network, connecting local community roads and major transportation corridors and meeting the transportation needs of the communities served by these facilities.

Objective LSR 1: Identify and prioritize capital improvements to the regional road system.

Policy LSR 1.1. Conduct planning activities to identify critical, high priority improvements.

Policy LSR 1.2. Seek funding for needed improvements, including consideration of RIP funding and other state and federal grant sources.

Policy LSR 1.3. Prioritize improvements to principal local roadways, particularly those providing primary access to communities, those that connect to the State Highway system, or those that relieve the impact on the State Highway system.

Objective LSR 2: Balance the need for safety and operational improvements with the need for maintenance of the existing system.

Policy LSR 2.1. Maintain a Pavement Management Program to analyze and determine the best use for funds available for pavement maintenance and rehabilitation.

Policy LSR 2.2. Assist local agencies in identifying, prioritizing, and funding safety improvements on local streets and roads systems, including projects identified in Local Road Safety Plans.

Policy LSR 2.3. Seek reliable funding sources for ongoing maintenance and rehabilitation efforts in order to protect investment in existing system.

Policy LSR 2.4. Consider "fix-it-first" projects when considering funding sources that are appropriate for maintenance and rehabilitation of the existing system, such as SB 1 funding.

Objective LSR 3: Support timely delivery of projects on local streets and roads systems.

Policy LSR 3.1. Provide local agencies with tools and technology to analyze impacts of transportation projects on network.

Policy LSR 3.2. Conduct transportation planning projects that prepare local and state agencies to deliver projects.

ACTIVE TRANSPORTATION (AT)

The Active Transportation System element of this RTP, along with these goals policies and objectives, also serves as the region's Active Transportation Plan. Some of the goals from that plan fall under the Complete Streets section of goals and policies, and are therefore listed in that section.

Goal: Provide a safe and useable network of bicycle and pedestrian facilities throughout the region as a means to lessen dependence on vehicular travel and improve the health of Mendocino County's residents through increased walking and biking.

Objective AT 1: Maximize funding opportunities for local agencies to develop and construct bicycle and pedestrian facilities.

Policy AT 1.1. Update the regional Active Transportation Plan on a timely basis to ensure local agency eligibility for Active Transportation Program funds and other grant programs.

Policy AT 1.2. Provide support to local agencies in pursuing grant funding such as Active Transportation Program funding for needed improvements.

Policy AT 1.3. Continue to reserve and allocate 2% of Local Transportation Funds for bicycle and pedestrian projects.

Policy AT 1.4. Consider RIP funding for priority active transportation projects.

Objective AT 2: Provide a non-motorized transportation network that offers a feasible alternative to vehicular travel.

Policy AT 2.1. Prioritize improvements providing access to schools, employment, and other critical services.

Policy AT 2.2. Prioritize projects that link to an existing facility or provide connectivity, including first mile and last mile connections to transit.

Policy AT 2.3. Fund planning activities in MCOG's annual Overall Work Program to identify priority improvements for commute purposes, such as safe routes to schools plans.

Policy AT 2.4. Consider the addition/improvement of bicycle and pedestrian facilities when planning and implementing local street and road improvements.

Policy AT 2.5. Encourage implementation of identified priority projects, such as projects from the "Pedestrian Needs Assessment & Engineered Feasibility Study" and segments of the Great Redwood Trail.

Policy AT 2.6. Maximize use of the non-motorized transportation facilities through support of and participation in non-infrastructure activities that increase awareness of and encourage use of these facilities.

Objective AT 3: Improve property value and strengthen local economies through more accessible commercial and residential areas.

Policy AT 3.1. Encourage the addition of pedestrian and bicycle improvements in local business areas and existing residential areas.

Objective AT 4: Provide context sensitive facilities.

Policy AT 4.1. Encourage flexibility of design standards in order to allow facilities in very rural or built-out areas.

Policy AT 4.2. Work with State or Federal agencies to allow design exceptions when needed.

Objective AT 5: Maximize investment in non-motorized transportation facilities through maintenance. Maintain active transportation facilities in order to ensure their continued use and availability.

Policy AT 5.1. Each local agency shall be responsible for conducting the maintenance of active transportation facilities within their jurisdiction, unless an alternative agreement exists. A variety of funding sources should be considered for maintenance activities.

Policy AT 5.2. If appropriate, local agencies may enter into maintenance agreements with other agencies or organizations for continued maintenance of active transportation facilities.

4 Mobility Element

Aviation Facilities. Ukiah Municipal Airport, a public use, General Aviation (GA) facility, serves the Ukiah Valley region. The City has owned and operated the airport since the 1930s. In 1942, the airport was established as an auxiliary military landing strip. The airport runway was lengthened to 4,423 feet in 1954. In 1968, the runway was relocated 585 feet south at its current location.

The Ukiah Municipal Airport Land Use Compatibility Plan (UKIALUCP) was adopted by the Mendocino County Airport Land Use Commission on May 20, 2021. On July 7, 2021, the Ukiah City Council adopted Ordinance 1215, requiring all future land use plans, zoning, and districting plans to comply with the UKIALUCP, including the 2040 Ukiah General Plan. The UKIALUCP includes protection for a future 5,000-foot runway to accommodate operations by CALFIRE Lockheed C-130 fire attack aircraft and was based on a 20-year forecast of 30,916 annual operations, representative of the airport's current condition and potential growth.

Travel Patterns

Journey to Work Data. According to longitudinal employer household dynamics (LEHD) data, 51 percent of workers employed in Ukiah live outside of the city, 28 percent live in the city and are employed outside of the city, and 21 percent both live and work in the city,

Rates of Walking and Bicycling. Historically, rates of walking and biking have fluctuated over time in Ukiah. Walking as a means of transportation was highest in 2009 based on U.S. Census Bureau American Community Survey 2009-2917 data, preceding a fluctuation, then a positive trend from 2014 to 2017. Similarly, biking as a means of transportation has also fluctuated, but has been decreasing following a peak in 2014.

Goods Movement. Goods movement in the City of Ukiah was examined through the lens of Caltrans Truck Annual Average Daily Traffic (AADT) data. U.S. 101 exists as a Terminal Access (STAA). Between 1990 and 2010, heavy truck AADT has varied between 1,375 and 1,696, followed by a decline in 2011. Between 2001 and 2014, AADT varied, followed by an increase from 2015 to 2017. While heavy truck AADT has increased over this period, the percentage of trucks with 3+ axels have been the lowest between 2015 and 2017, compared to previous years. Two axel trucks comprised the majority, or 72 percent, of heavy truck AADT in 2017. Three-axel, four-axel, and five-axel trucks comprise 6 percent, 2 percent and 20 percent, respectively, of total heavy truck AADT in 2017. Increases in online shopping have resulted in more significant impacts to local roads.

4.3 Planned Transportation Network

This section describes the planned street and transportation network. The Mobility Element is intended to provide long-term transportation solutions while maintaining the city's friendly, small-scale character.

Guiding Principles

The planned transportation network will provide an efficient transportation system that includes a citywide network of Complete Streets. Multi-modal approaches to increasing travel options are emphasized in Ukiah as part of the planning process prior to undertaking expensive and urban- appearing street improvements. Ukiah recognizes that simply accommodating cars first and looking for alternatives afterwards shortchanges opportunities for alternate transportation and a more spontaneous, diverse, and lively community. Air quality, land use, and circulation are closely interrelated. A commitment to providing Complete Streets is a key to effective transportation planning and will maximize the effectiveness of the existing street network. One means of increasing the capacity of the existing system is to consider all forms of transportation when making planning decisions.

Emphasis on Sustainable Mobility

Planning that respects the small-town quality of life in Ukiah will retain the intimacy of streets that attract pedestrian usage. Maintaining a balance between the various travel mode options during the planning process ensures that getting from home to work, shop, or play is convenient and easy without requiring use of a motor vehicle.

In addition, planning that respects the small-town quality of life in Ukiah will retain the intimacy of streets that attract pedestrian usage. Historically, priority has gone to automobile-centric needs over multi-modal usage in transportation development, representing a focus on Level of Service (LOS) efficiency rather than comprehensive mobility planning. Prioritizing multi-modal travel goals in order to achieve a balance between the various options to vehicular access during the planning process ensures that getting from home to work, shop, or play is convenient and easy without the automatic need for a car.

Figure 4-1 Street Network Plan & Functional Classifications

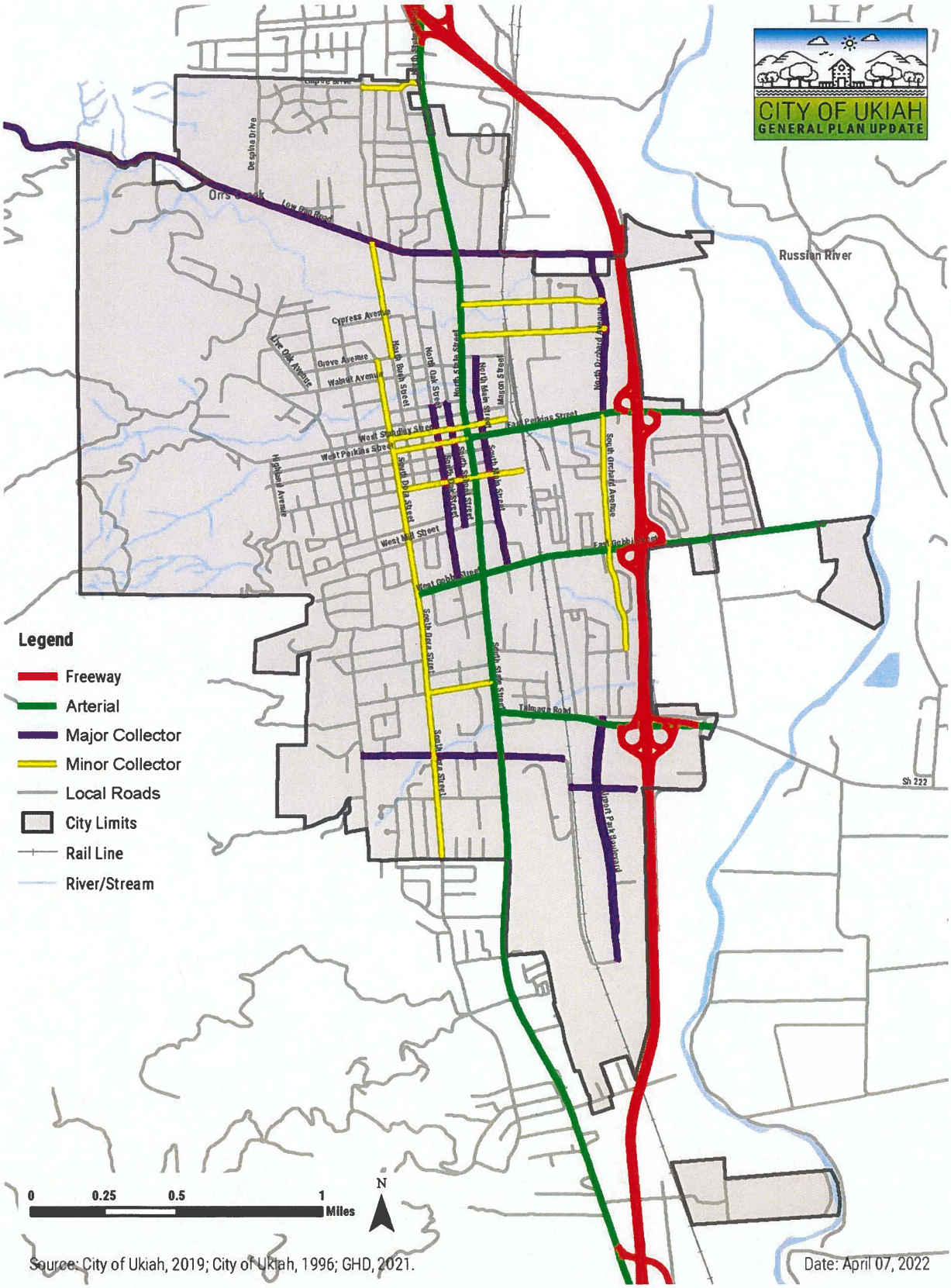
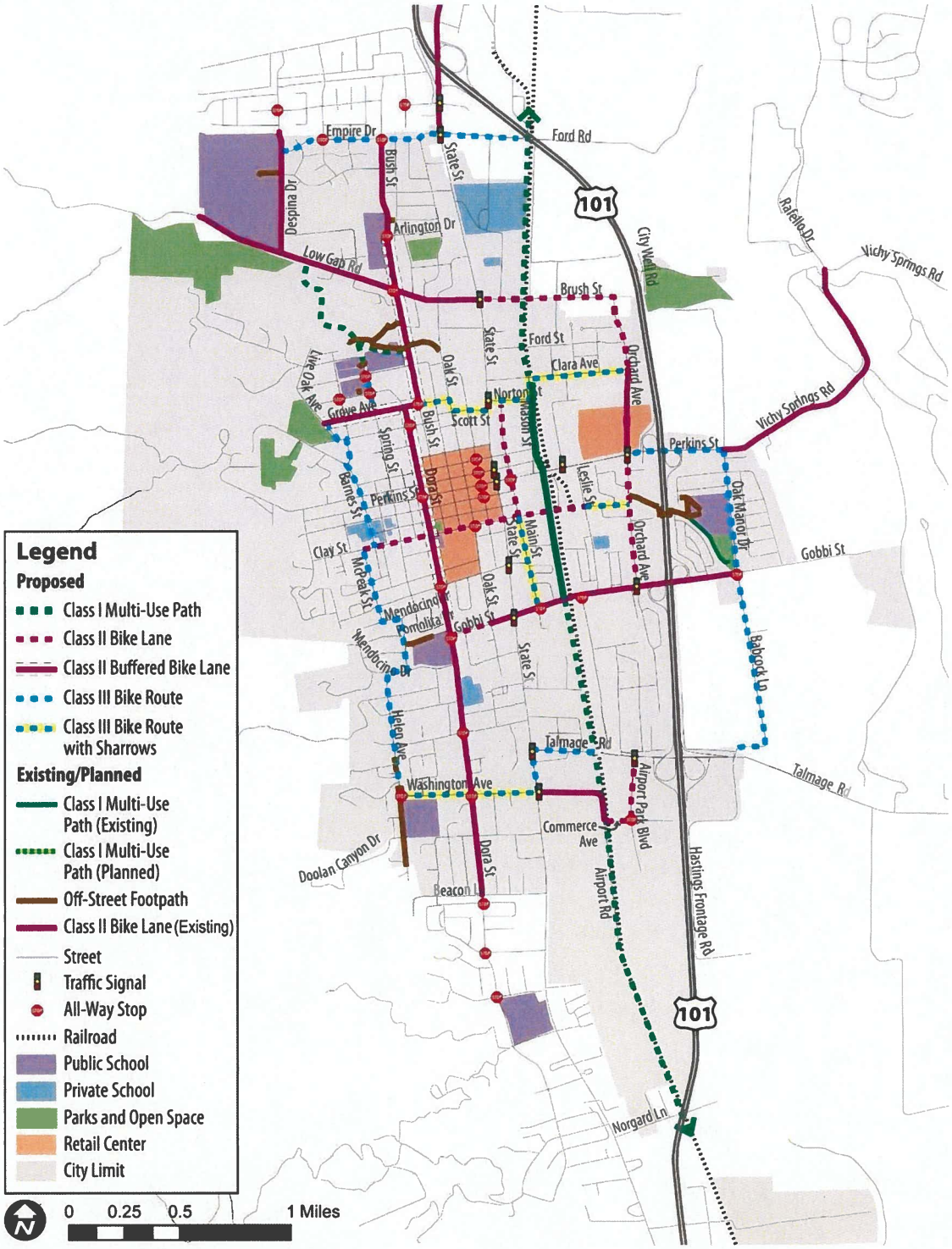
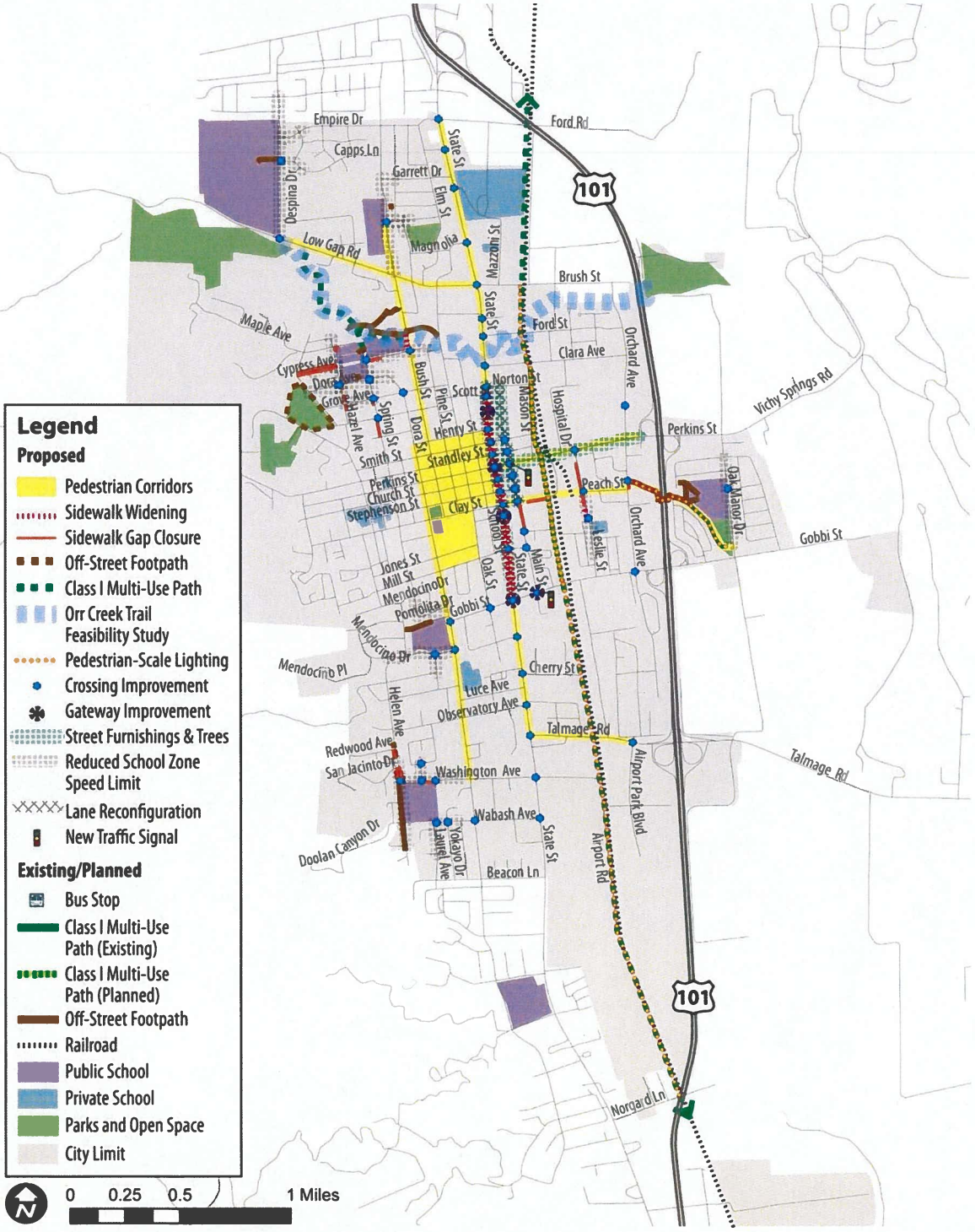


Figure 4-2 Bikeway Network Plan



Source: Ukiah Bicycle & Pedestrian Master Plan, August 2015.

Figure 4-3 Pedestrian Priority Network



Source: Ukiah Bicycle & Pedestrian Master Plan, August 2015

4.4 Complete Streets

Goal and Policies

MOB-1 *To provide a citywide network of complete streets that meet the needs of all users, including pedestrians, bicyclists, motorists, transit, movers of commercial goods, children, seniors, and persons with disabilities. (Source: New Goal)*

MOB-1.1 Complete Streets
The City shall design streets holistically, using a complete streets approach, which considers pedestrians, bicyclists, motorists, transit users, and other modes together to adequately serve future land uses. *(New Policy)*

MOB-1.2 Multi-modal Access
The City shall require that all new development and redevelopment projects include provisions for multi-modal access provisions such as pedestrian and bicycle facilities, and vehicle and transit where relevant. *(Existing Policy CT-3.1, modified)*

MOB-1.3 Reallocate Space for Complete Streets.
The City shall reallocate roadway space to allow complete streets improvements on streets with excess traffic capacity. *(New Policy)*

MOB-1.4 Block Length
The City shall limit block lengths to 600 feet wherever feasible to enhance multi-modal circulation and connectivity. *(New Policy)*

MOB-1.5 Balance Transportation Spending
The City will provide funding for transportation improvements for each of the key travel modes to support the long-term viability and safety of each mode, as well as required maintenance. *(New Policy)*

MOB-1.6 Roundabouts
The City shall consider the installation of roundabouts to enhance safety at intersections, and as a key component of Ukiah's sustainability strategy. *(New Policy)*

MOB-1.7 Land Use and Street Classification Compatibility
The City shall ensure that General Plan land use density and intensity standards are compatible with the classification of streets from which the land uses are accessed. *(Source: Existing Program CT-1.1a, modified)*

MOB-1.8 **New Development and Complete Streets**

The City shall require all new development to provide adequate access for pedestrians, bicyclists, motorists, transit users, and persons with disabilities, as well as facilities necessary to support the City's goal of maintaining a complete street network. *(Source: Existing Program CT-1.1b, modified)*

MOB-1.9 **Bikeway Network**

The City shall strive to complete the citywide bicycle network to create a full network of bicycle facilities throughout Ukiah, including bicycle lanes on all arterial and collector street segments where feasible. *(New Policy)*

MOB-1.10 **Bicycle Parking Standards**

The City shall maintain efficient and updated parking standards for bicycle parking to ensure development provides adequate bicycle parking, while reducing reliance on automobiles. *(New Policy)*

MOB-1.11 **Pedestrian Barriers & Utility Relocation**

The City shall support elimination of barriers to pedestrian travel on sidewalks and walking paths including requiring the relocation or undergrounding of utilities where appropriate. *(New Policy)*

4.5 Vehicle Miles Traveled

Goals and Policies

MOB-2 *To reduce vehicle miles traveled (VMT) to and from residences, jobs and commercial uses in Ukiah. (Source: New Goal)*

MOB-2.1 **Vehicle Miles Traveled (VMT) Reduction**

The City shall support development and transportation improvements that help reduce VMT below regional averages on a "residential per capita" and "per employee" basis. *(New Policy)*

MOB-2.2 **Transportation Demand Management**

The City shall support programs to reduce vehicle trips, including measures such as reduced parking requirements that aim to increase transit use, car-pooling, bicycling and walking. *(New Policy)*

MOB-2.3 **Pedestrian Facilities**

The City shall encourage new development and redevelopment that increases connectivity through direct and safe pedestrian connections to public amenities, neighborhoods, shopping and employment destinations throughout the City. *(New Policy)*

MOB-2.4 **Transit Facility Design**

The City shall require new development to include facilities designed to make public transportation convenient. *(Source: Existing Policy CT-9.1, modified)*

MOB-2.5 **Transit Ridership**

The City shall support funding and incentives to increase transit ridership opportunities. *(Source: Existing Policy CT-9.2, modified)*

MOB-2.6 **Downtown Transit Center**
The City shall support creation of a Transit Center. (*Source: Existing Policy CT-10.5)*

MOB-2.7 **Bicycle Accessible Transit**
The City shall encourage the MTA and other public transportation providers to make bus routes connecting Ukiah with other areas bicycle accessible. *(Source: Existing Program CT-8.1e, modified)*

4.6 Transportation Safety and Planning

Goals and Policies

MOB-3 *To provide a safe transportation system that eliminates traffic-related fatalities and reduces non-fatal injury collisions. (Source: New Goal)*

MOB-3.1 **Safety Improvements**
The City shall provide safety improvements along high-injury and fatality streets and intersections. *(Source: New Policy)*

MOB-3.2 **Safe Routes to Schools**
The City shall promote Safe Routes to Schools programs for all schools serving the City. *(Source: New Policy)*

MOB-3.3 **Safety and Traffic Calming**
The City shall use traffic calming methods within residential and mixed-use areas, where necessary, to create a pedestrian-friendly circulation system. *(Source: New Policy)*

MOB-3.4 **Safety Considerations**
The City shall ensure that planned non- transportation capital improvement projects, on or near a roadway, consider safety for all travel modes during construction and upon completion. *(Source: New Policy)*

MOB-3.5 **Community Engagement**
The City shall engage the community in promoting safe walking and bicycling through education and outreach. *(Source: New Policy) PI]*

MOB-3.6 **Emergency Access**
The City shall work with the Ukiah Valley Fire Authority to address street design and the accessibility required for emergency vehicles. *(Source: New Policy)*

MOB-3.7 **Video Enforcement**
The City shall consider the use of video surveillance for traffic enforcement. *(Source: New Policy)*

MOB-3.8 **Truck Traffic in Residential Areas.**
The City shall discourage truck traffic on local residential streets to increase safety and reduce noise *(Source: New Policy)*

4.7 Transportation and Mobility Needs

MOB-4 *To maintain an ongoing periodic evaluation process to inventory transportation and mobility needs. (Source: Existing GP Goal CT-5)*

MOB-4.1 Multi-modal Transportation Studies

The City shall conduct multi-modal transportation studies in association with required updates to the Regional Transportation Plan to update the General Plan and appropriately update and amend the Mobility Element. *(Source: Existing Policy CT-5.1, modified)*

MOB-4.2 Transportation Performance Measures

The City shall evaluate transportation performance holistically, taking into consideration multi-modal system performance measures that emphasize the efficient movement of people. *(Source: New Policy)*

MOB-4.3 Safety Monitoring

The City shall monitor high-priority corridors and intersections to better understand the potential for safety improvements. *(Source: New Policy)*

MOB-4.4 Level of Service

The City shall use peak-hour traffic level of service (LOS) to consider whether a street or intersection has adequate remaining capacity to service the traffic generated by a proposed project, except that meeting traffic LOS goals should not occur in a manner that would limit travel by other modes or result in increased VMT. *(Source: New Policy)*

MOB-4.5 Peak Hour Traffic LOS Goals

The City shall adopt the following intersection peak hour traffic Level of Service (LOS) goals to guide street network planning (but not to be used for assessing CEQA impacts):

a) At intersections with signals, roundabouts or four-way stop signs: operation at LOS D, except where pedestrian volumes are high in which case LOS E may be acceptable.

b) At intersections with stop signs on side streets only: operation at LOS E, except where side streets have very low traffic volumes, in which case LOS F conditions may be acceptable. *(Source: Existing Program CT-16.4e, modified)*

MOB-4.6 Alternate Access Routes

The City shall explore the feasibility of establishing alternate north/south and east/west access routes. *(Source: Existing Goal CT-19, modified)*

MOB-4.7 Meet Future Travel Demand

The City shall extend existing streets or construct new streets as needed to meet existing and future travel demands. *(Source: Existing Policies CT-19.1, CT-19.2, modified)*

2.5 Special Planning Areas

Development in Ukiah is focused to achieve more specific outcomes by designating three special planning areas: the Downtown Zoning Code, the Ukiah Valley Area Plan, and the Ukiah Municipal Airport Land Use Compatibility Plan). These special planning areas have more detailed development standards while remaining consistent with the overall direction of the General Plan.

Downtown Zoning Code

In 2012 the City adopted the Downtown Zoning Code (DZC) to encourage the development of a healthy, safe, diverse, compact, and walkable urban community. The DZC created three downtown-specific zoning districts, shown on Figure 2-3:

- **General Urban (GU)** zone allows for mixed-use and urban residential uses in a wide range of building types, from single use and single-family to a mix of uses and multifamily. GU zone allows for residential densities between 10 and 28 du/ac.
- **Urban Center (UC)** zone allows for higher-density residential and mixed-use buildings that may accommodate retail, office, services, local and regional civic uses, and residential uses. This zone has a tight network of streets with wide sidewalks, regularly spaced street tree planting, and buildings set close to lot frontages. The UC zones allows for residential densities between 15 and 28 du/ac.
- **Downtown Core (DC)** zone allows the highest density and intensity of development by allowing a wide variety of commercial and residential uses located in mixed-use buildings. This zone has small, walkable blocks with regularly spaced street trees and buildings set at the frontage line. The DC zone allows for residential densities between 15 and 28 du/ac.

Figure 2-3 Downtown Specific Zoning Districts

City of Ukiah

Housing Element Update 2019-2027

Draft completed: July 12, 2019
Adopted: October 23, 2019
Certified by HCD: December 5, 2019

Prepared by:
City of Ukiah Community Development Department
300 Seminary Ave. Ukiah, CA 95482
www.cityofukiah.com/community-development

project applicant or City Staff could initiate an amendment to the General Plan to accommodate the project or activity. This process involves internal staff review, CEQA compliance, a public hearing before the Planning Commission, and a public hearing before the City Council.

This Housing Element Update has been guided by the goals and polices of the existing General Plan. The General Plan includes the following Vision Statements:

"We envision development that provides a mix of housing types and prices."

"We envision aesthetically designed, affordable housing, planned to encourage walking, bicycling, and public transit."

D. Public Participation and Community Outreach

Recognizing the importance of engaging the community in a dialogue about housing- defining problems and creating solutions- the City deployed a collaborative public participation approach and extensive outreach effort to help ensure appropriate housing goals and policies were more efficiently and effectively evaluated, developed, and implemented. The following steps were taken to engage community members and housing stakeholders in this process:

1. Release of a Community Housing Satisfaction Survey in December 2017 in advance of the City beginning the update process of the Housing Element. The City received responses from 385 survey participants.

2. Development of a Housing Element webpage on the Projects page of the City's website. The City distributed information and updates on the webpage throughout the development of the Housing Element: https://www.cityofukiah.com/projects/housing-element-update/.

3. Advertising of two community housing workshops, including email notifications and phone calls to a list of nearly 100 local stakeholders of developers, lenders, housing advocacy groups, water and sewer providers, and representatives of local tribes. Both meetings were advertised for at least two weeks prior to the meeting date and also announced during televised City Council meetings prior to the two dates. Announcements were also posted on the City of Ukiah's Facebook page.

4. Presentations and tables/booths at Hispanic community events and meetings, including *Ukiah Vecinos en Acción*, *Latinx*, and the Mexican Consulate.

5. Development of a press release sent to local media outlets. This press release was picked up by the primary local newspaper in the region, *The Ukiah Daily Journal*. A series of news articles was written by *The Ukiah Daily Journal* about the updating of the City's Housing Element, which helped increase public awareness.

6. Posting of flyers announcing the two workshops in both English and Spanish at lower income housing developments across the City.

7. Hosting of two Community Housing Workshops:

Community Housing Workshop #1

The City of Ukiah hosted the first Community Housing Workshop on March 21, 2019, from 5:30 pm to 7:30 pm. Over 100 local stakeholders were invited; approximately 40 people attended. City staff made a presentation describing the Housing Element Update process and State requirements, Regional Housing Needs Allocation, and an overview of the existing (2014-19) Housing Element goals and programs. The existing goals were evaluated with the public's input in mind and goals were revised and added based on this input.

Community Housing Workshop #2

The City of Ukiah hosted a second Community Housing Workshop on April 25, 2019, from 5:30 pm to 7:30 pm. Over 100 stakeholders/residents were again invited, including additional individuals that had been asked to be added to the invitation list; 31 attended. City staff made a presentation of key updated housing and demographic data that had been collected since the first workshop and included a summary of comments received from the first workshop. Attendees participated in exercises to arrive at suggested goals and policies and voted for those policies that were most important to them.

The input received at both workshops is summarized in Appendix A and has been incorporated into the Housing Element where applicable. Also included in Appendix A is a list of stakeholders invited to participate in the Housing Element Update process. Appendix B contains the results of the Community Housing Satisfaction Survey.

FIGURE 4.1
VACANT AND UNDERUTILIZED SITES AND CONSTRAINTS

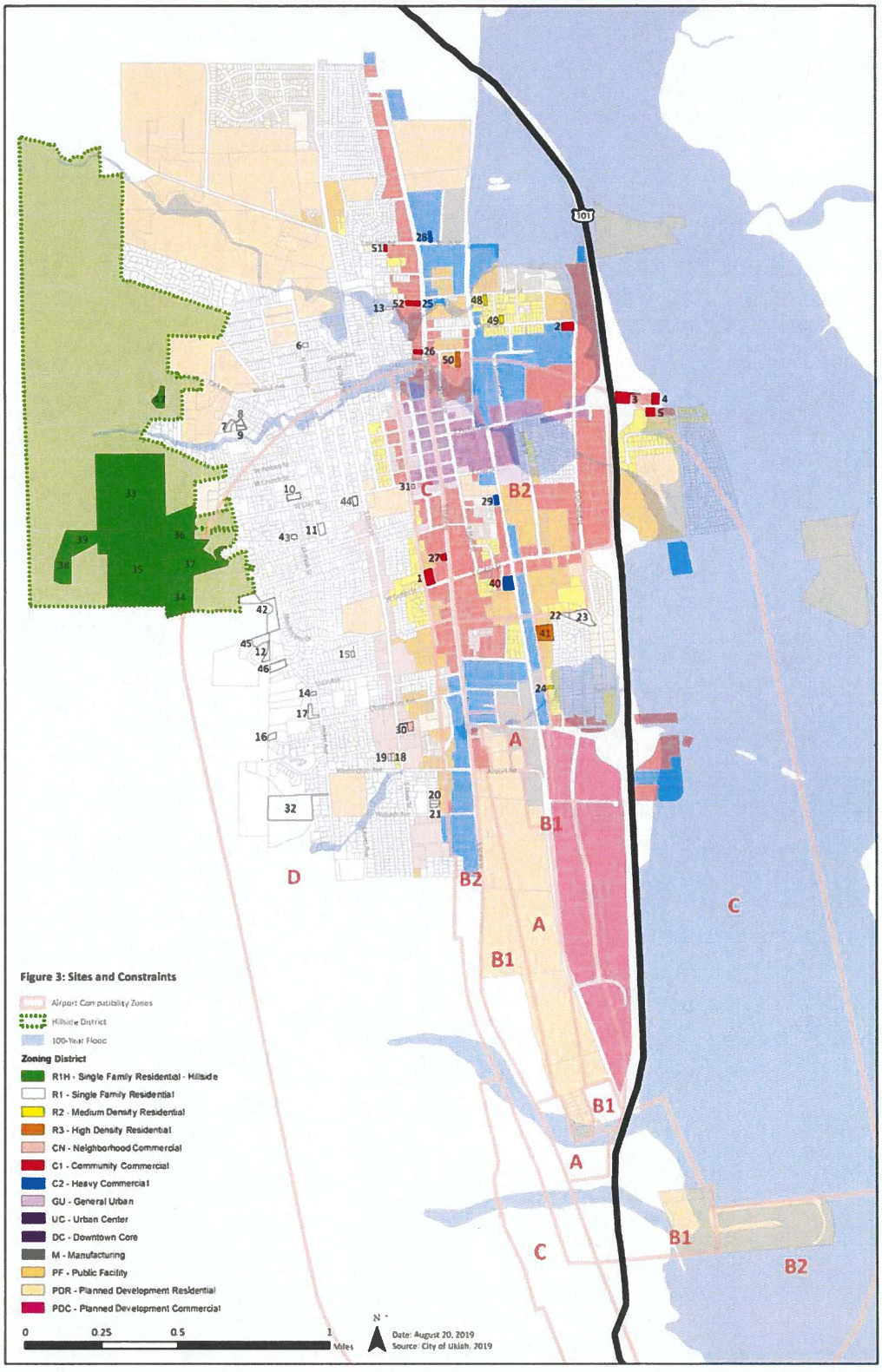
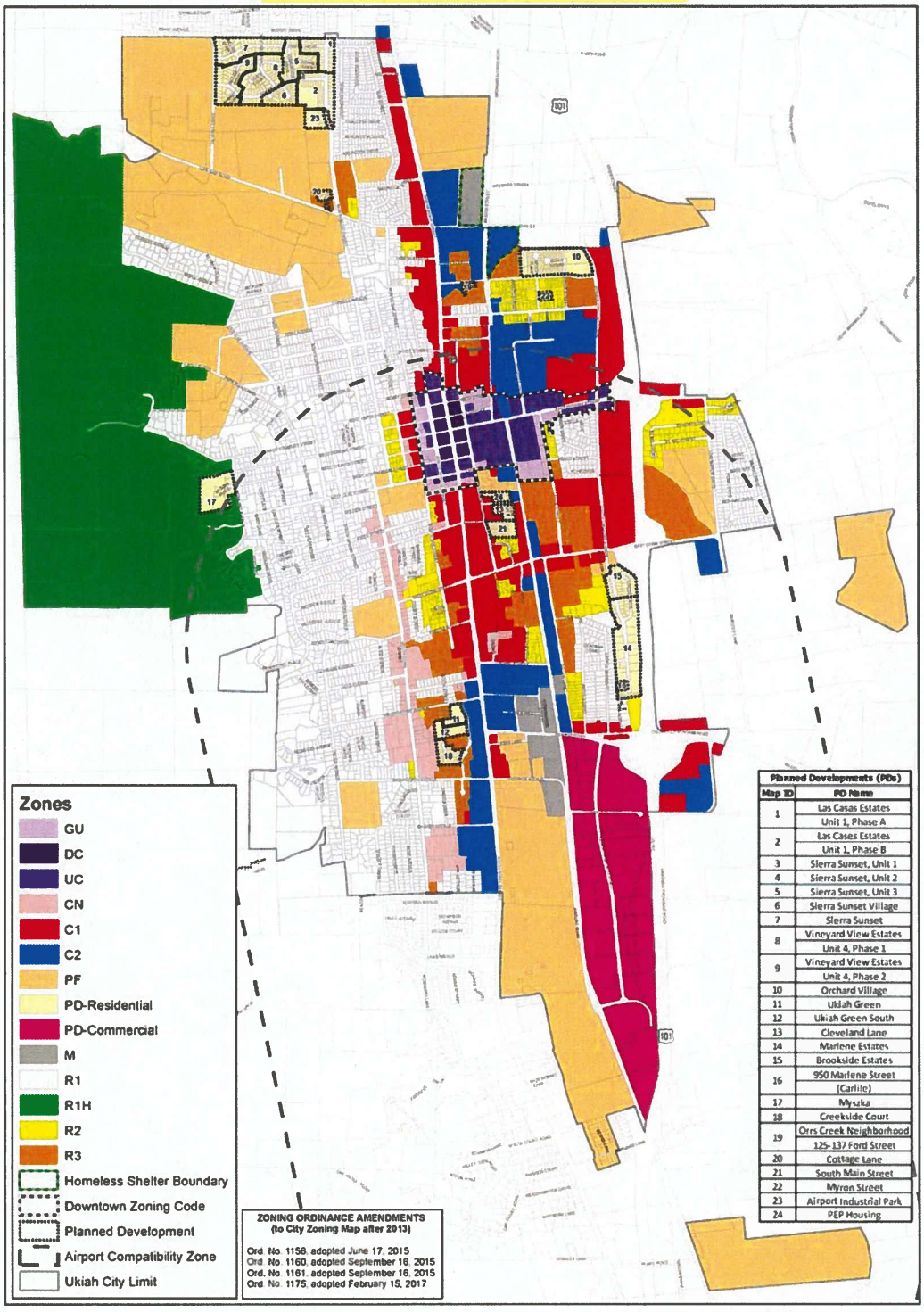


FIGURE 5.1

CITY OF UKIAH ZONING MAP



STATE OF CALIFORNIA - BUSINESS, CONSUMER SERVICES AND HOUSING AGENCY GAVIN NEWSOM, *Governor*

DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
DIVISION OF HOUSING POLICY DEVELOPMENT
2020 W. El Camino Avenue, Suite 500
Sacramento, CA 95833
(916) 263-2911 / FAX (916) 263-7453
www.hcd.ca.gov

December 5, 2019

Sage Sangiacomo, City Manager
City of Ukiah
300 Seminary Avenue
Ukiah, CA 95482

Dear Sage Sangiacomo:

RE: City of Ukiah's 6th Cycle (2019-2027) Adopted Housing Element

Thank you for submitting Ukiah's Housing Element adopted October 23, 2019 and received for review on October 28, 2019. Pursuant to Government Code section 65585, subdivision (h), the California Department of Housing and Community Development (HCD) is reporting the results of its review.

HCD is pleased to find the adopted Housing Element in full compliance with state Housing Element law (Article 10.6 of the Government Code). The adopted element was found to be substantially the same as the revised draft Housing Element that HCD's June 22, 2019 review determined met statutory requirements.

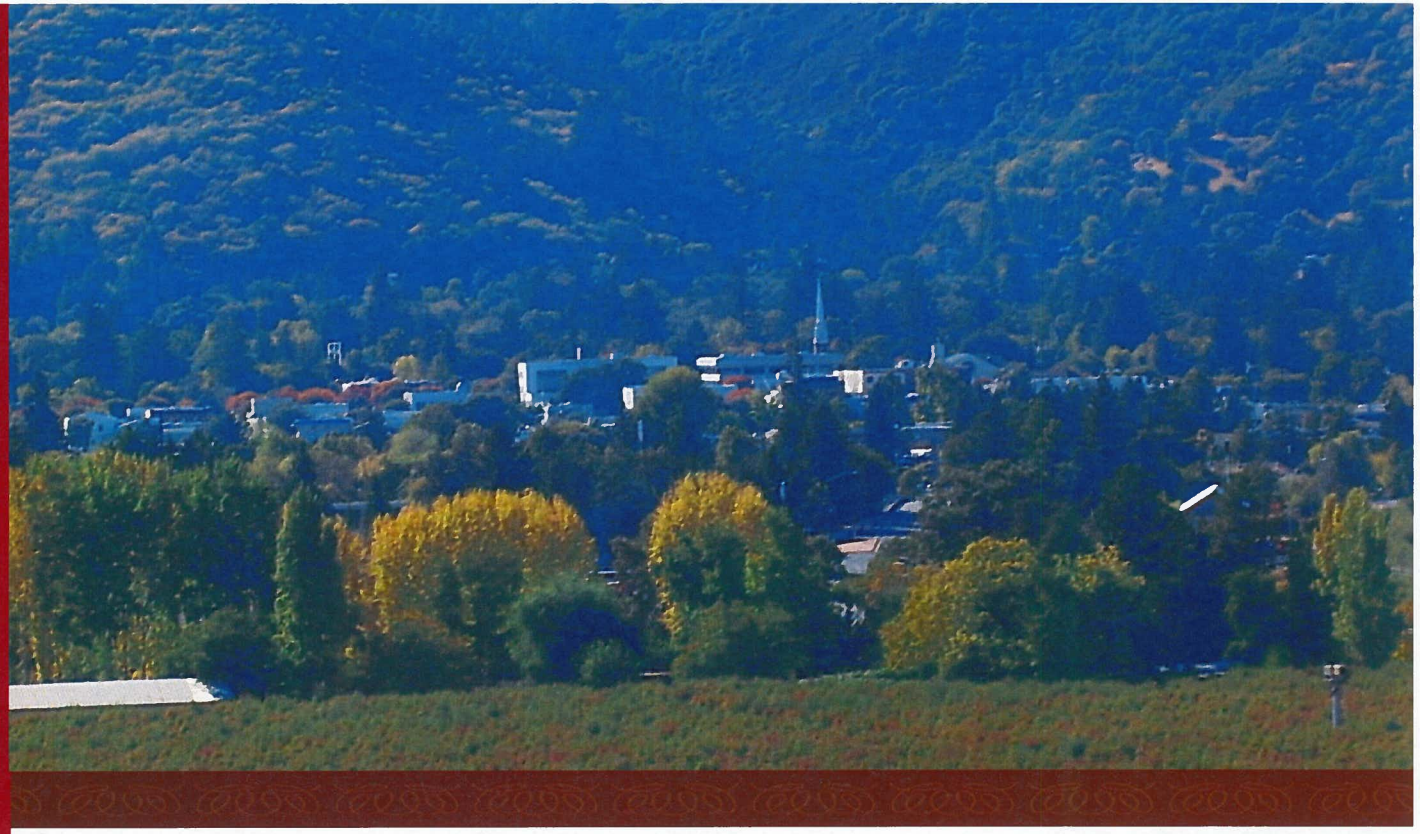
For your information, some General Plan element updates are triggered by Housing Element adoption. HCD reminds the City of Ukiah to consider timing provisions and welcomes the opportunity to provide assistance. For information, please see the Technical Advisories issued by the Governor's Office of Planning and Research at: http://opr.ca.gov/docs/OPR_Appendix_C_final.pdf and http://opr.ca.gov/docs/Final_6.26.15.pdf.

Several federal, state, and regional funding programs consider Housing Element compliance as an eligibility or ranking criteria. For example, CalTrans Senate Bill (SB) 1 Sustainable Communities grants; the Strategic Growth Council and HCD's Affordable Housing and Sustainable Communities program; and the SB 2 Planning Grants as well as ongoing SB 2 funding consider Housing Element compliance and/or annual reporting requirements pursuant to Gov. Code section 65400. With Housing Element compliance, City of Ukiah meets the Housing Element requirements for these funding sources.

HCD appreciates the hard work and dedication Craig Schlatter, Community Development Director, provided throughout the course of the Housing Element review. HCD wishes the City of Ukiah success in implementing its Housing Element and looks forward to following its progress through the General Plan annual progress reports pursuant to Gov. Code section 65400. If HCD can provide assistance in implementing the Housing Element, please contact Sohab Mehmood, of our staff, at (916) 263-1968.

Sincerely,

Shannan West
Land Use & Planning Manager



Section

1

Excerpts from

The Ukiah Valley Area Plan

U.S. 101 is an important scenic corridor that provides travelers and residents visual access to the beauty of the Valley. Prior efforts to enhance the corridor's appearance included the Chamber of Commerce's U.S. 101 beautification program that resulted in the planting of trees in an area between Burke Hill Drive and Lake Mendocino Drive. Organized efforts such as Caltrans' Adopt-a-Highway program provides litter cleanup by local groups, improving the overall aesthetic beauty of the Valley. Improvement of the appearance along the U.S. 101 corridor enhance the impressions on the users of that highway.

Gateways are important because they provide a resident or visitor's "first impression" of the Valley and its various community areas. The major Valley gateways include U.S. 101, State Routes 20 and 253, and Eastside Road. Within the Valley, entrances to the various community areas such as the City of Ukiah, Talmage, and Calpella are also considered gateways. Several of the Valley's gateways present a panorama of orchards, vineyards, trees, mountain sides, and various levels of development. It is important to protect and enhance gateway views which can become cluttered with too many structures and a proliferation of signs and billboards. The community wishes to preserve and enhance the beauty that is an attraction to visitors and source of pride for residents.

The gateways into the City of Ukiah and the immediate surrounding vicinity include North and South State Street, Perkins Street, Gobbi Street, Talmage Road and Low Gap Road. These gateways focus attention on the streetscape and development immediately visible in the area. The relatively intense and disorganized commercial development at many of these gateways could negatively influence the perception of the area for first time visitors and everyday residents alike. Indeed much of State Street outside of downtown Ukiah is dominated by commercial strip development. While street trees have been installed along some property frontages, the tree species generally lack the ultimate growth size needed to provide a significant visual presence by softening or unifying the streetscape.

Both Talmage and Calpella are distinct communities which have gateways that provide visitors with an overall impression of each community's unique characteristics. Talmage contains unique features such as the entrance to the City of Ten Thousand Buddhas which is visible as one approaches from the south on Eastside Road. Calpella includes features such as Russian River views, open space and agricultural lands immediately adjacent to the built environment, and an eclectic style of buildings in close

Section 5

Circulation and Transportation

GOAL CT-1
Provide for efficient and safe circulation networks throughout the Ukiah Valley.

GOAL CT-2
Enhance pedestrian, bicycle, and transit connectivity between land use types.

GOAL CT-3
Coordinate transportation planning needs, developer obligations, and construction responsibilities.

BACKGROUND

The relationship between circulation and land use is very strong. The transportation network influences where and how land develops. At the same time, every land use type is responsible for the generation of trips. How this network functions impacts drivers, pedestrians, bicyclists, and transit users. It also impacts air quality, plant and animal habitat, storm water runoff, noise, energy consumption, and greenhouse gas emissions. The UVAP Circulation and Transportation Section, in conjunction with the Land Use Section, addresses transportation infrastructure issues in an integrated manner.

The need for an efficient transportation system to carry existing and future traffic is of critical importance. Since the circulation network crosses jurisdictional boundaries, it is important for the County to work together with the City of Ukiah, Mendocino Council of Governments (MCOG), and the California Department of Transportation (Caltrans) to develop a Valley wide network that benefits all modes of transportation. It is important that this section and future collaborative transportation documents are coordinated with adopted MCOG transportation plans such as the Mendocino County Regional Transportation Plan and Mendocino County Regional Bikeway Plan.

A pedestrian-friendly residential street that incorporates stormwater management elements.

Since road improvement financing methods are limited and vary depending on whether improvements are necessary to alleviate existing deficiencies or accommodate new traffic flows, other funding mechanisms may need to be considered.

As a consequence, many communities have turned to development impact fees as a means of generating funds to pay for improvements that are necessitated by proposed projects. It should be noted that this method of financing cannot be used to correct existing deficiencies. An impact fee may be imposed on a project in relation to the project's proportionate impact on an intersection or road segment.

In addition to building new roads, other methods of improving traffic flow also exist. These can include changing the frequency and type of intersection control (e.g. stop sign, signal, traffic circle) and routing traffic to avoid conflicts (e.g. reducing the number of driveways and the use of center turn lanes and medians). Providing safe routes for bicycles can also help move traffic safely and efficiently through the Valley.

Alternatives to road expansion should be considered during the planning process, prior to undertaking expensive and environmentally impacting road construction projects. Alternatives to the automobile for travel from home to work, retail, and recreational locations should also be included where feasible when undertaking road construction projects. Historically, minimal attention has been given to the needs of pedestrians, bicyclists and public transit riders in both existing and newly developing areas. Several policies and implementation measures contained in this section will help prioritize these alternatives.

THE ROAD CLASSIFICATION SYSTEM

The term "road classification" refers to the hierarchy by which roads are grouped according to the type of service that they provide. The Ukiah Valley is served by a transportation system consisting of State highways, City and County roads, and private roads. This system can be described according to a hierarchy of functional classifications which assist in linking road capabilities and land uses. Map 5.1 depicts the current and proposed road network for the Ukiah Valley.

The State highway system includes U.S. 101 and State Routes 20, 222 and 253. U.S. 101 (State Route 101) is an important north-south arterial between the City of Ukiah and communities in the Valley. The freeway has four lanes where access is controlled and limited to freeway interchanges. State Route 20 (Highway 20) within the Ukiah Valley is an east-west, two lane arterial connecting U.S. 101 west of Calpella with Interstate 5 (I-5) and the North Sacramento Valley. State Route 222 (Talmage Road), a major collector between U.S. 101 and Talmage, was designated a state highway when it served the former State Mental Hospital (now the City of the 10,000 Buddahs) in Talmage. State Route 253, also known as Boonville-Ukiah Road, links Ukiah with Highway 128 and ultimately State Route 1 on the Mendocino coast. This two lane connector intersects U.S. 101 at the South State Street interchange.

The County road system extends from the State highway system to serve the unincorporated areas of the County. The County road system is primarily a network of two lane roads including paved and unpaved roads. This system consists of arterials, collectors, and local roads.

Finally, some local rural or residential roads in Mendocino County are not maintained by the County Department of Transportation, but rather by the property owners whose properties they serve. Other private rural roads are operated by commercial, industrial,

or timber operations and extend outward from the existing road network. Aside from the timber haul roads, the remaining private roads function as local roads.

Level of Service

Level of Service (LOS) is a metric that allows comparison of traffic volumes between different types of roads and intersections. The LOS ratios and corresponding letter names were established by the Institute of Traffic Engineers (ITE) and is explained in Table 5.1 below. Road segment level of service is the relationship of traffic volume to the capacity of a segment of road between two defined points. Intersection level of service defines traffic congestion at an intersection, and is expressed as the traffic volume in relation to intersection capacity. Both measures of level of service are important in determining whether the road network is capable of handling the additional traffic generated by a proposed project. Level of Service F operating conditions occur when the number of vehicles trying to use a particular road segment or intersection exceed its design capacity.

Future Road and Circulation Patterns

To accommodate the future growth projected under full buildout within the planning area and to improve circulation patterns, the Mendocino County Department of Transportation in conjunction with the Mendocino Council of Governments (MCOG) has identified a series of new roads or road extensions that may be needed over the life of the UVAP.

U.S. 101 is the major north-south arterial, serving not only interregional travel but widely used for travel in the local Ukiah Valley. U.S. 101 has nine interchanges serving the Ukiah area including Burke Hill Road; South State Street/State Route 253; Talmage Road; Gobbi Street, Perkins Street/Vichy Springs Road; Softball Fields (Northbound only); North State Street; Lake Mendocino Drive; and Moore Avenue.

Traffic waits to pass through the intersection of Gobbi Street and Waugh Lane.

Although U.S. 101 has no capacity issues now or in the future, Caltrans has indicated that the several interchanges do not meet current engineering guidelines for safety or capacity. Of particular concern are the North State, Perkins, Gobbi and the Talmage intersections. All have ramp configurations that pose potential safety concerns due to their placement in respect to surface street intersections, line of sight issues, and interaction with private driveways. The close distance between the Gobbi and Perkins interchanges leads to safety concerns for traffic on U.S. 101 itself. There are also capacity concerns with the southbound off ramps at North State Street and Talmage as well as both directions at Perkins.

OTHER MODES OF TRANSPORTATION

Mendocino County is heavily dependent on the use of single-occupant vehicles for transportation. As a result, almost thirty percent of all land in urban areas is typically dedicated for circulation purposes, most of which goes to accommodate motor vehicles. Acquisition of land for new roads and widening existing roads is expensive and has social and environmental implications. This Area Plan envisions that the County, City and other agencies will be proactive in facilitating the use of alternative modes of transportation such as walking, bicycling, ride-sharing and increased public transportation use.

Encouraging alternatives to single occupant vehicles delivers a number of benefits to the Valley. Fewer vehicles on the road helps to maintain air quality by reducing emissions. It can also defer the need for road widening or other improvements. By having additional non-vehicular transportation options, households may also be able to lower their transportation expenses by driving less.

Improving intermodal transportation (the use of more than one method of travel in a single trip) is important to improving connectivity within the Valley and beyond. The Circulation Section addresses intermodal by identifying integrated transportation corridor which includes the Valley arterials, rail, major north-south bus lines, and air transportation.

A bicycle and pedestrian network that is integrated into the transportation system can enhance the quality of life in the Ukiah Valley. Both transportation plans and development proposals should incorporate the needs of bicyclists and pedestrians into their documents. By including these facilities into a plan, a more balanced transportation network that encourages people to leave their cars can be developed. Several planning documents that attempt to improve bicycle and pedestrian access already exist. The Mendocino County Regional Bikeway Plan provides a coordinated system in the Valley. The City of Ukiah has adopted a Bicycle and Pedestrian Master Plan which includes the Rail Trail, a bicycle and pedestrian path within the portion of the North Coast Rail Authority right-of-way located within the City limits. Based upon information contained on the North Coast Rail Authority (NCRA) web site, the NCRA is not opposed to bike and pedestrian paths on its right-of-way. Extension of bikeways to the north could provide an important link to Mendocino College, Lake Mendocino and beyond. Easy to use paths, with convenient secure bicycle parking and safe travel ways will encourage people to use bikes or walk on short trips and errands. A bicycle and pedestrian system can be combined for both transportation and recreational purposes.

Traffic calming measure on a residential street.

Improving the safety, location, access, and connectivity can increase and encourage walking for short errands or to reach another mode of transportation such as the bus. Sidewalks with shade reduce heat reflection from paved areas. Separating pedestrian paths from the roadway with landscaping, or even a bicycle lane or parking, provides walkers with a greater sense of safety. Walking can be encouraged by providing sidewalks within and between residential neighborhoods and commercial areas. Providing shortcuts between areas not interconnected by roads can also promote walking.

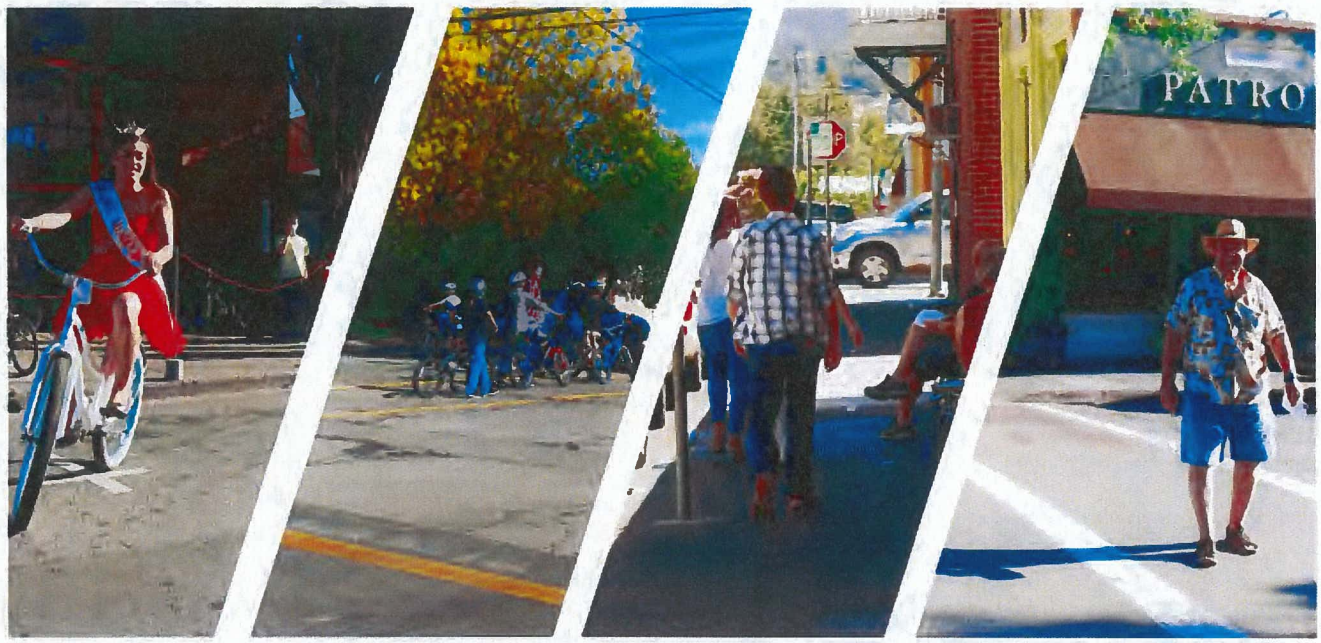
Complete Streets

In order to facilitate increased use of alternative modes of transportation, to reduce reliance upon the automobile and to improve community health, it is important to provide the infrastructure that creates an environment that is safe and enjoyable to pedestrians and bicyclists.

The Ukiah Valley currently has many portions of road that do not offer bicycle lanes and some that do not even provide pedestrian access. As a result of the lack of infrastructure, many people do not currently feel safe biking or walking as a regular means of transportation. By creating complete streets, which meet the needs of multiple modes of transportation, the County can increase the comfort people have with walking and bicycling, for commuting and recreation. Increasing bike lanes and paths and developing a connected route for bicycle travel will allow for greater use of the bicycle as a more commonly used mode of transportation. Providing sidewalks, crosswalks, and safe resting points in medians for pedestrians crossing larger streets, and the inclusion of traffic calming devices also increases the ability for pedestrians to safely access more of their community.

In addition to addressing safety concerns, aesthetics play an important role in increasing pedestrianism. Including landscaping, street trees, benches, and wide sidewalks for pedestrians provides a more enjoyable experience. Landscaping may be used in conjunction with traffic calming measures, such as roundabouts, and bulb-outs, to increase safety as well as provide an attractive environment for drivers, bicyclers, and pedestrians alike.

In addition to aesthetics, landscaping may also provide opportunities to address stormwater runoff as well. By integrating Best Management Practices for stormwater management into landscape design for road construction or improvements, many benefits to the community may be achieved at once.



UKIAH BICYCLE AND PEDESTRIAN MASTER PLAN

August 2015

Prepared For:
City of Ukiah

Prepared By:
Alta Planning + Design
W-Trans
Walk Bike Mendocino

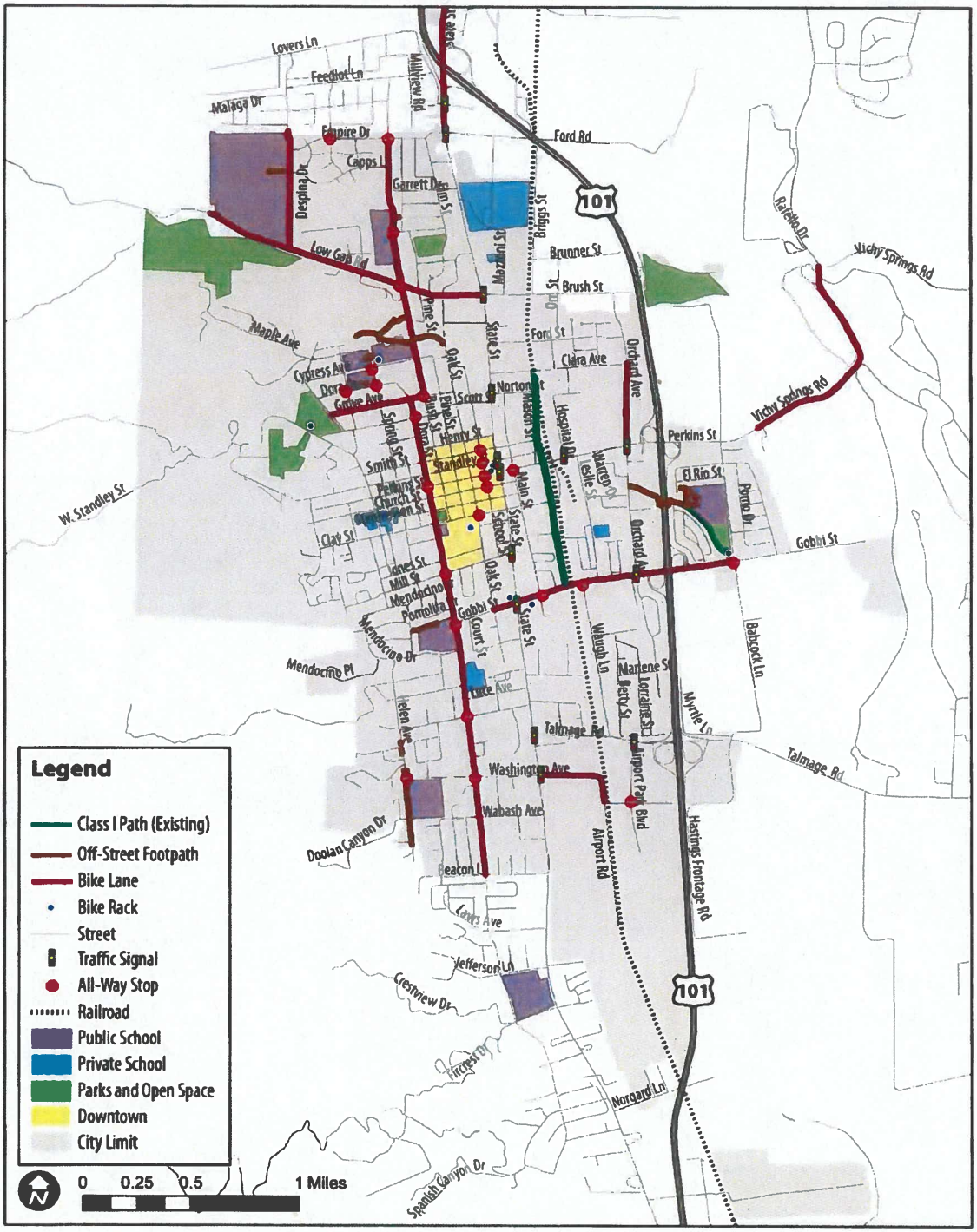


Figure 2: Existing Bicycle Facilities

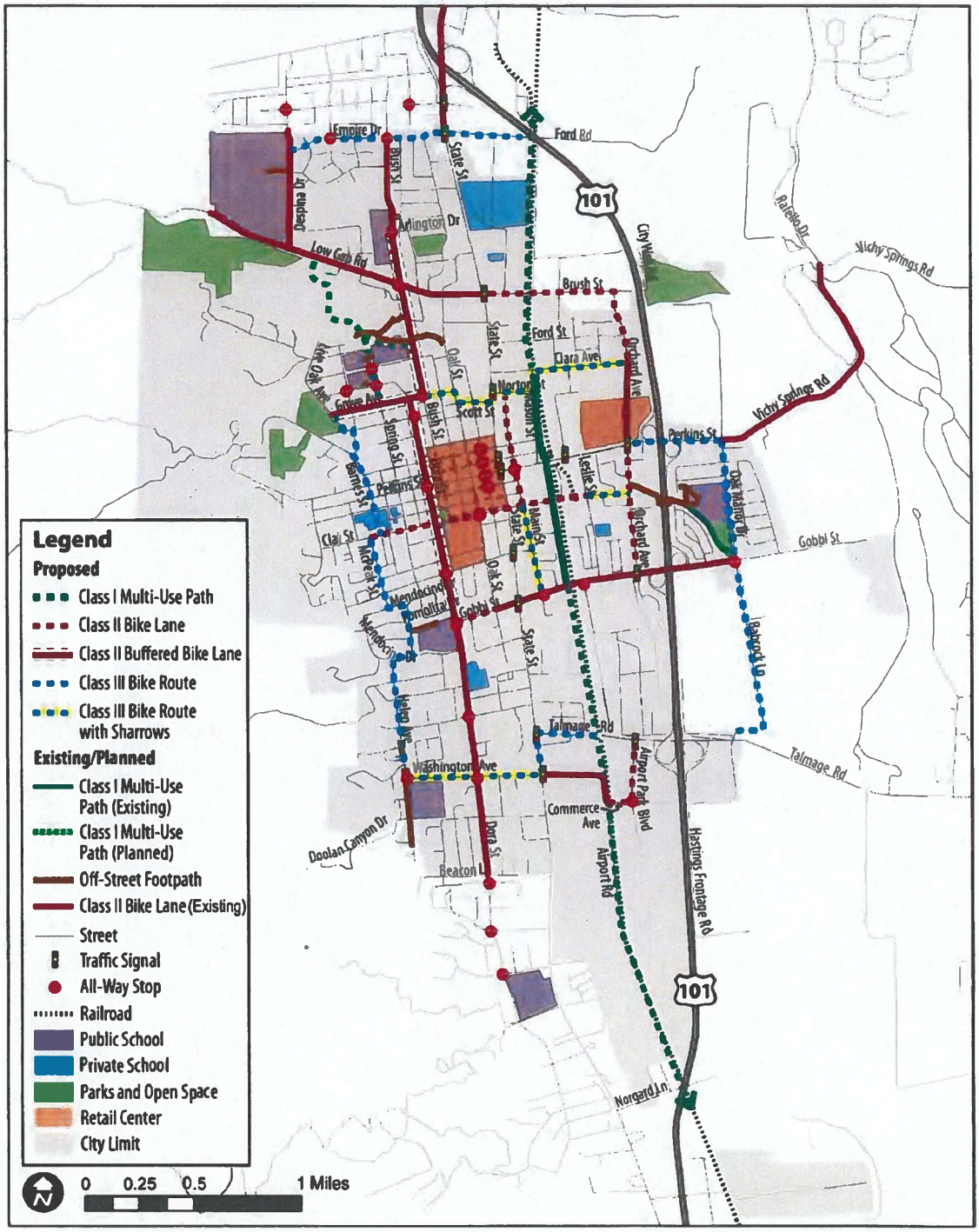
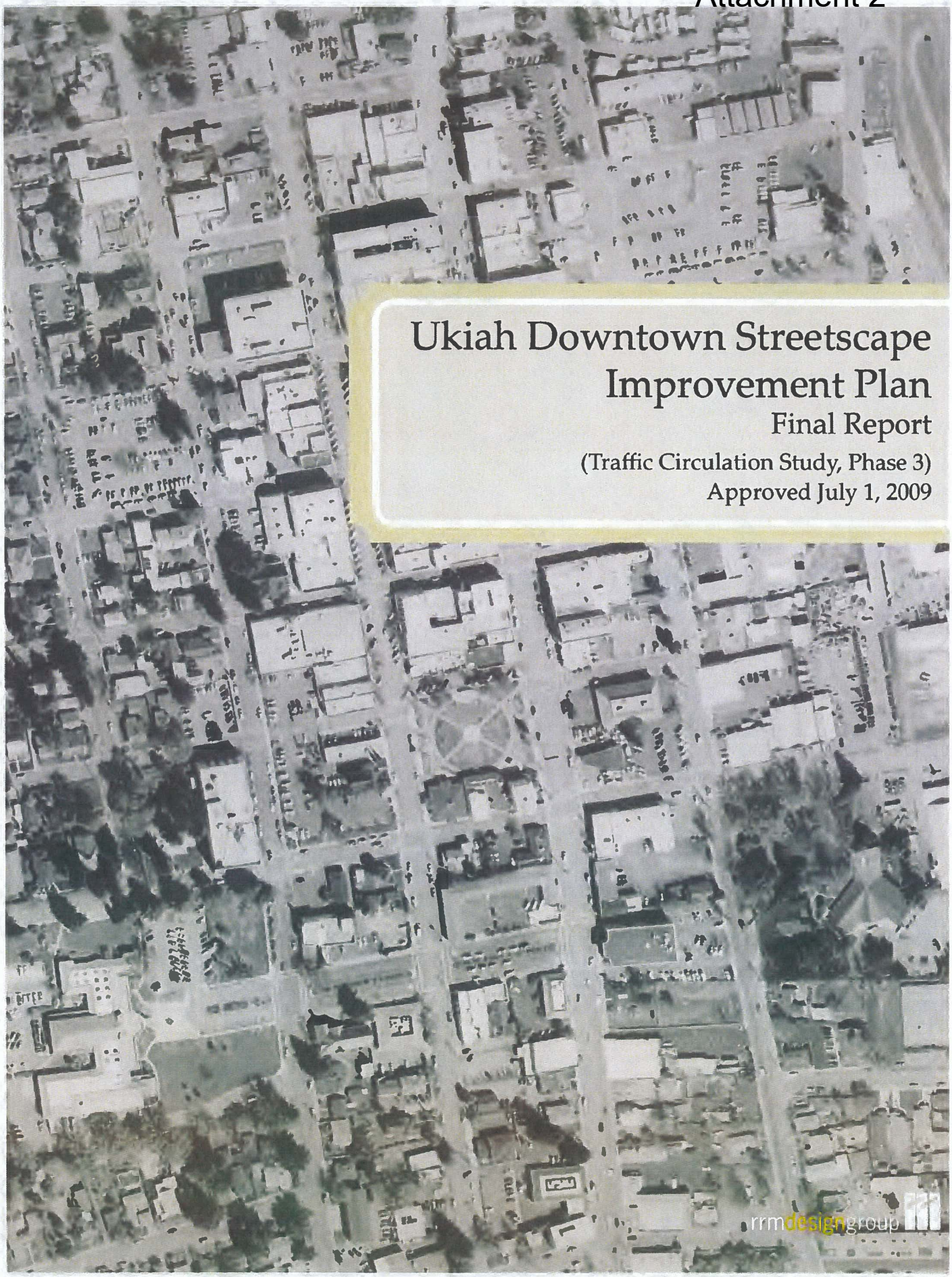


Figure 15: Proposed Bicycle Facilities



Ukiah Downtown Streetscape Improvement Plan

Final Report

(Traffic Circulation Study, Phase 3)

Approved July 1, 2009

rrmdesigngroup

ACKNOWLEDGEMENTS

CITY COUNCIL MEMBERS

Phil Baldwin - Mayor
Benj Thomas - Vice Mayor
Mari Rodin
Douglas Crane
Mary Anne Landis

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Sage Sangiacomo, Assistant City Manager
Tim Eriksen, Director of Public Works/City Engineer
Rick Seanor, Deputy Director of Public Works
Charley Stump, Director of Planning & Community Development
Kim Jordan, Senior Planner
Cathleen Moller, Economic Development Coordinator

FUNDING PROVIDED BY

Mendocino Council of Governments (MCOG)
Ukiah Redevelopment Agency

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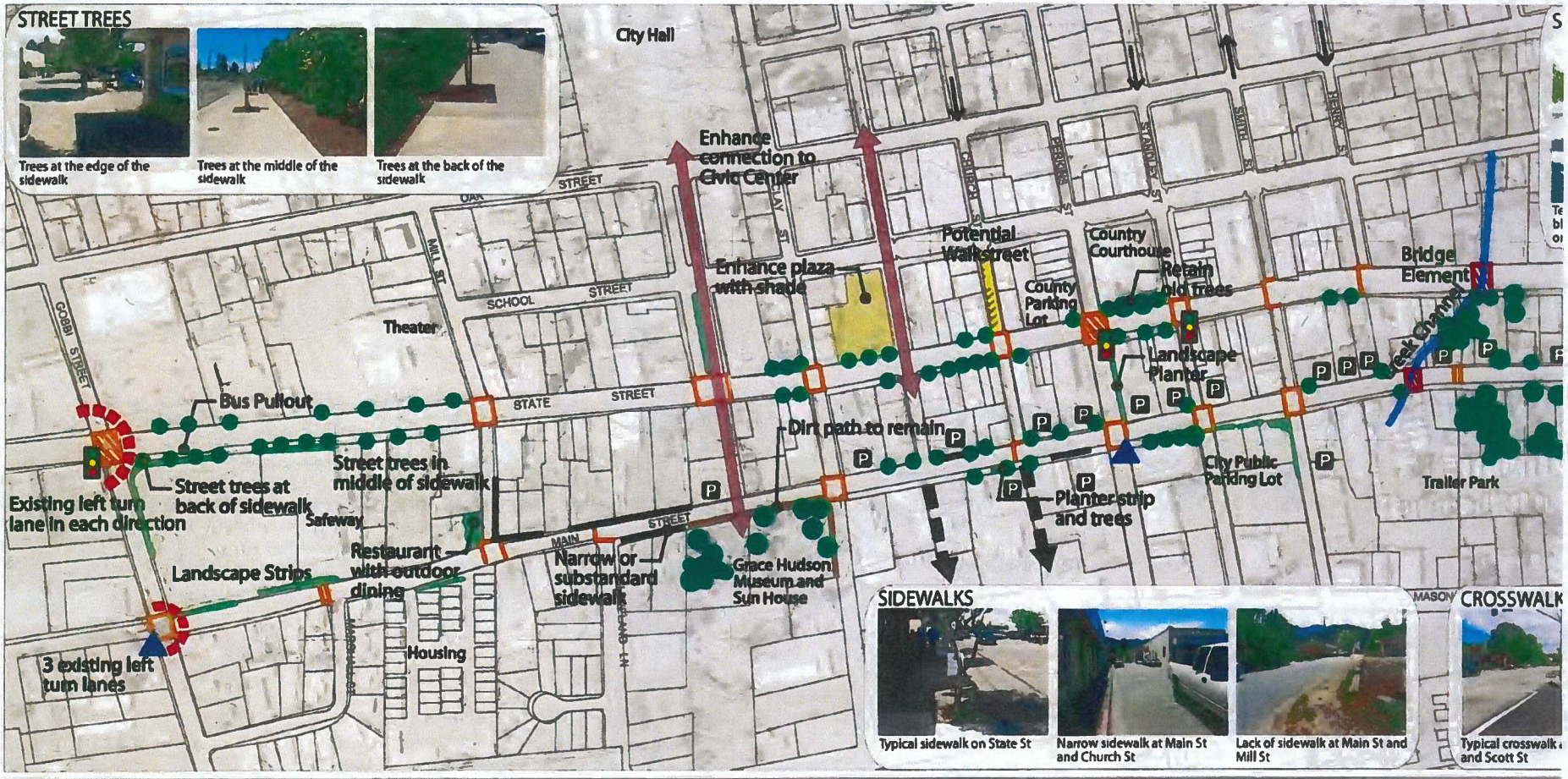


LEGEND

- Existing Parking
- Potential Road Connection
- Potential Pedestrian Street
- Gateway Opportunity
- Potential Landscape Improvement
- Potential Sidewalk Improvement
- Existing Crosswalk
- Decorative Paving Opportunity
- Existing Street Trees
- Existing Landscaping
- Potential Bridge Element
- Existing Traffic Light

UKIAH DOWNTOWN STREETSCAPE IMPROVEMENT PLAN OPPORTUNITIES AND CONSTRAINT MAP

Scale 1"=100'
JULY, 2008

Attachment 2

City of Ukiah Downtown Streetscape Project 2020

Downtown Streetscape Improvement Project

This project will provide streetscape improvements in downtown Ukiah on State Street, Perkins Street, and Standley Street, including sidewalk widening, curb ramps and bulb outs, street lights, street furniture and tree planting.

The project also includes a road diet between Henry Street and Mill Street that will transform the existing four-lane cross section into a three-lane cross section with one travel lane in each direction and a two way left-turn lane in the center with on-street parking maintained. In addition to the road diet, signal modifications will be made at each of the three signalized intersections (Standley Street, Perkins Street, and Mill Street) to provide vehicle detection, improve coordination and re-orient the signal equipment to support the road diet alignment. This work will also include a pavement overlay, striping, and pavement markings.

Streetscape Contact Information

Shannon Riley

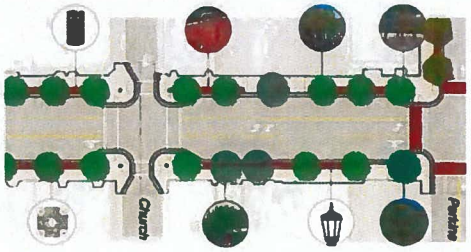
Deputy City Manager
(707) 467-5793
sriley@cityofukiah.com

Traci Boyl

Management Analyst to the City Manager's

EXISTING & PROPOSED STREET SECTIONS

TYPICAL INTERSECTION
Downtown Ukiah Improvements



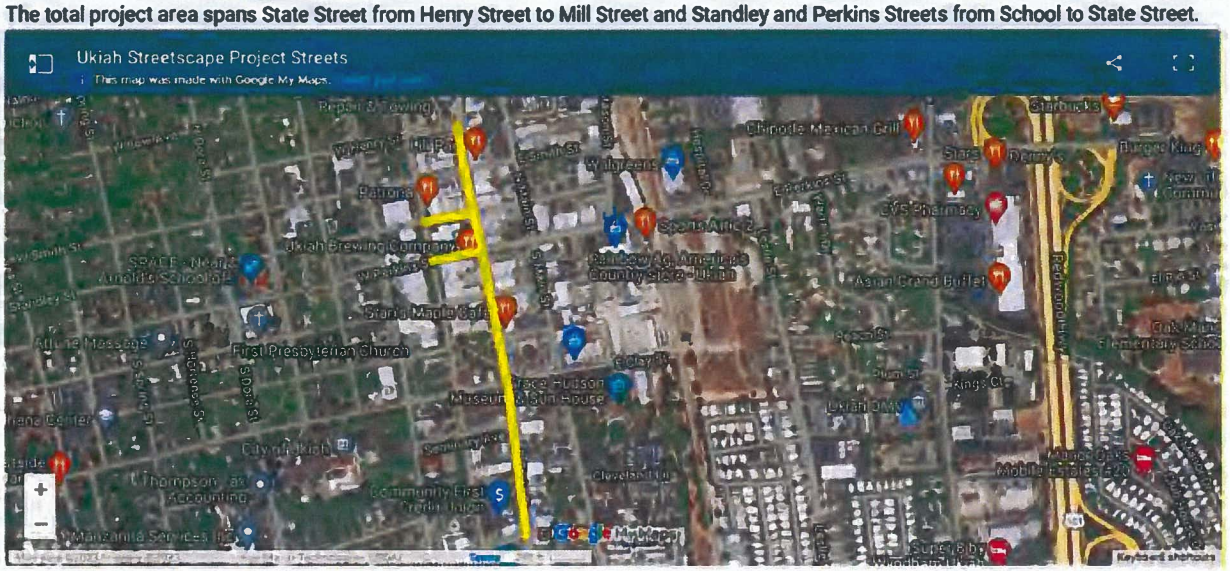
? FAQ + Project Information | Public Notices + Community Forums | Meet the Ukiah Streetscape Teams

Project Information

- Jan 17, 2020 Frequently Asked Questions
- May 9, 2019 Downtown Ukiah Streetscape Project, Presentation

What Area Does the Project Cover?

The total project area spans State Street from Henry Street to Mill Street and Standley and Perkins Streets from School to State Street.



Timeline:

- An environmental review phase (completed in 2016)
- A design phase (in 2016-19, where we solicited public input)
- Construction in 2020

California Department of Transportation
Division of Transportation Planning

Sustainable Transportation Planning Grant Program

Fiscal Year 2024-25

GRANT APPLICATION GUIDE

Sustainable Communities, Climate Adaptation, and Strategic Partnerships

Grant Application Deadline

January 18, 2024

Submit Applications via **Smartsheet Form**

ADA Notice: For individuals with sensory disabilities, this document is available in alternate formats. For information call (916) 654-6410 or TDD (916) 654-3880 or write Records and Forms Management, 1120 N Street, MS-89, Sacramento, CA 95814.

Updated September 2023

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1. GRANT PROGRAM OVERVIEW

The Sustainable Transportation Planning Grant Program was created to support the California Department of Transportation's (Caltrans) Mission: Provide a safe and reliable transportation network that serves all people and respects the environment.

The California Legislature passed, and Governor Edmund G. Brown Jr. signed into law, Senate Bill 1 (SB 1, Beall, Chapter 5, Statutes of 2017) – The Road Repair and Accountability Act of 2017, a transportation funding bill that provides a reliable fund source to maintain and integrate the State's multi-modal transportation system. In addition to the $9.5 million in traditional State and federal grants, approximately $25 million in SB 1 funds for Sustainable Communities Grants is available for each grant cycle.

The State-funded Sustainable Communities grants ($29.5 million) are intended to support and implement Regional Transportation Plan (RTP) Sustainable Communities Strategies/Alternative Planning Strategies (SCS/APS) (where applicable) and to ultimately achieve the State's greenhouse gas (GHG) reduction target of 40 and 80 percent below 1990 levels by 2030 and 2050, respectively.

The State-funded Climate Adaptation Planning grants ($31.9 million) enacted with Senate Bill 198 (Committee on Budget and Fiscal Review, Chapter 71, Statutes of 2022), will support local and regional identification of transportation-related climate vulnerabilities through the development of climate adaptation plans, as well as project-level adaptation planning to identify adaptation projects and strategies for transportation infrastructure.

The federal-funded Strategic Partnerships and Strategic Partnership Transit grants ($4.5 million) support Federal Planning Factors and address State highway/transit issues of regional, interregional, and/or statewide significance, in partnership with Caltrans.

Eligible planning projects must have a transportation nexus per Article XIX Sections 2 and 3 of the California Constitution. Therefore, successful planning projects are expected to directly benefit the multi-modal transportation system. These grants will also improve public health, social equity, environmental justice, the environment, and provide other important community benefits. The period of grant fund availability spans over three FYs and approximately 32 months for grant project activities after the grant agreement is executed and Caltrans issues a Notice to Proceed. Refer to Chapter 9.2 for details regarding the anticipated grant project start and expiration dates.

1.1 Sustainable Transportation Planning Grant Summary Chart

Grant	Fund Source	Purpose	Who May Apply	Local Match
Sustainable Communities Competitive	**Budget** RMRA and SHA State funds Approx. $17 million Approx. $3 million set-aside for technical projects Approx. $500,000 set-aside for Native American Tribal Governments Goal: 50% of grants should benefit Underserved Communities*** **Grant Minimum** $50,000 for Underserved Communities, including Native American Tribal Governments and rural communities; $100,000 for all others **Grant Maximum** $700,000	Funds local and regional multimodal transportation and land use planning projects that further the region's RTP SCS/APS (where applicable), contribute to the State's GHG reduction targets, address the needs of underserved communities, and assist in achieving the Caltrans Mission and Grant Program Objectives (See Chapter 1.2).	**The following are eligible to apply as a primary applicant:** • MPOs **with sub-applicants** • RTPAs • Transit Agencies; • Cities and Counties with compliant Housing Elements and completed Annual Progress Reports; • Native American Tribal Governments • Other Public Transportation Planning Entities **The following are eligible to apply as a sub-applicant:** • MPOs/RTPAs • Transit Agencies • Universities and Community Colleges • Native American Tribal Governments • Cities and Counties with compliant Housing Elements and completed Annual Progress Reports • Community-Based Organizations • Non-Profit Organizations (501.C.3) • Other Public Entities**	11.47% minimum* (in cash or an in-kind contribution).
Sustainable Communities Formula	**Budget** RMRA State funds $12.5 million	Funds local and regional multimodal transportation and land use planning projects that further the region's RTP SCS/APS (where applicable), contribute to the State's GHG reduction targets, and assist in achieving the Caltrans Mission and Grant Program Objectives (See Chapter 1.2).	**The following are eligible to apply as a primary applicant:** • MPOs	11.47% minimum* (in cash or an in-kind contribution).

* For local match requirements, refer to Chapter 6.5 of this Guide.

** Public entities include state agencies, the Regents of the University of California, district, public authority, public agency, and any other political subdivision or public corporation in the State (Government Code Section 811.2).

*** For purposes of this grant program, underserved communities are the most vulnerable places that are facing disproportionate rates of economic, environmental, and health burdens, and are defined according to the tools in Appendix A.

Grant	Fund Source	Purpose	Who May Apply	Local Match
Climate Adaptation Planning	**Budget** State funds Cycle 2: $31.9 million total Up to $3.9 million set-aside for Native American Tribal Governments Goal: 50% of grants should benefit Underserved Communities*** **Grant minimum** $100,000 **Grant maximum** $1.5 million (single organization); above $1.5-$3 million to be considered for partnership applications	Funds local and regional identification of transportation-related climate vulnerabilities through the development of climate adaptation plans, as well as project-level climate adaptation planning to identify adaptation projects and strategies for transportation infrastructure.	**The following are eligible to apply as a primary applicant:** • MPOs • RTPAs • Transit Agencies; • Cities and Counties • Native American Tribal Governments • A joint exercise of powers authority established pursuant to Chapter 5 of Division 7 of Title 1, with the consent of a transportation planning agency or a county transportation commission for the jurisdiction in which the transportation project will be developed. • A local transportation authority created or designated pursuant to Division 12.5 or Division 19 of the Public Utilities Code. **The following are eligible to apply as a sub-applicant:** • MPOs/RTPAs • Transit Agencies • Universities and Community Colleges • Native American Tribal Governments • Cities and Counties • Community-Based Organizations • Non-Profit Organizations (501.C.3) • Other Public Entities**	11.47% minimum* (in cash or an in-kind contribution); not required for Native American Tribal Governments

* For local match requirements, refer to Chapter 6.5 of this Guide.

** Public entities include state agencies, the Regents of the University of California, district, public authority, public agency, and any other political subdivision or public corporation in the State (Government Code Section 811.2).

*** For purposes of this grant program, underserved communities are the most vulnerable places that are facing disproportionate rates of economic, environmental, and health burdens, and are defined according to the tools in Appendix A.

Grant	Fund Source	Purpose	Who May Apply	Local Match
Strategic Partnerships	**Budget** FHWA SPR, Part I Federal funds $1.5 million **Grant Minimum** $100,000 **Grant Maximum** $500,000	Funds transportation planning studies in partnership with Caltrans that address the regional, interregional, and statewide needs of the State highway system, and also assist in achieving the Caltrans Mission and Grant Program Objectives (See Chapter 1.2).	**The following are eligible to apply as a primary applicant:** • MPOs • RTPAs **The following are eligible to apply as a sub-applicant:** • MPOs/RTPAs • Transit Agencies • Universities and Community Colleges • Native American Tribal Governments • Cities and Counties • Community-Based Organizations • Non-Profit Organizations (501.C.3) • Other Public Entities**	20% minimum* (in non-federal funds or an in-kind contribution).
Strategic Partnerships – Transit	**Budget** FTA Section 5304 Federal funds $3 million **Grant Minimum** $75,000 for rural RTPAs; $100,000 for MPOs **Grant Maximum** $500,000	Funds multi-modal planning studies, with a focus on transit, in partnership with Caltrans, of regional, interregional and statewide significance, and also assist in achieving the Caltrans Mission and Grant Program Objectives (See Chapter 1.2)	**The following are eligible to apply as a primary applicant:** • MPOs • RTPAs **The following are eligible to apply as a sub-applicant:** • MPOs/RTPAs • Transit Agencies • Universities and Community Colleges • Native American Tribal Governments • Cities and Counties • Community-Based Organizations • Non-Profit Organizations (501.C.3) • Other Public Entities**	11.47% minimum* (in non-federal funds or an in-kind contribution).

* For local match requirements, refer to Chapter 6.5 of this Guide.

** Public entities include state agencies, the Regents of the University of California, district, public authority, public agency, and any other political subdivision or public corporation in the State (Government Code Section 811.2).

1.2 Grant Program Objectives and Considerations

Successful grant applications address and articulate how the project relates to the Caltrans Mission, Grant Program Objectives, and Grant Program Considerations. The Grant Specific Objectives identified in Chapters 2.1, 3.1, 4.1 and 5.1 indicate the specific purpose of the Sustainable Communities, Climate Adaptation, and Strategic Partnership transportation planning grants, respectively, and must also be considered when preparing an application.

Grant Program Objectives

The following Grant Program Objectives are focused on achieving the Caltrans Mission and are intended to inform application development, including:

Objective	Description
Sustainability	Promote reliable and efficient mobility for people, goods, and services, while meeting the State's GHG emission reduction goals, preserving the State's natural and working lands, and preserving the unique character and livability of California's communities.
Preservation	Preserve the transportation system through protecting and/or enhancing the environment, promoting energy conservation, improving the quality of life, and/or promoting consistency between transportation improvements and State and local planning growth and economic development patterns.
Accessibility	Increase the accessibility of the system and mobility of people, inclusive of older adults, those with disabilities, and freight.
Safety	Prioritize the elimination of fatal and serious injury crashes and enhance safe use of our roadways through the Safe System approach to realize a vision of zero road fatalities and serious injuries by 2050.
Innovation	Promote the use of technology and innovative designs to improve the performance and social equity of our transportation system and provide sustainable transportation options.
Economy	Support the economic vitality of the area (i.e., enables global competitiveness, enables increased productivity, improves efficiency, increases economic equity by enabling robust economic opportunities for individuals with barriers to employment and for Disadvantaged Business Enterprise (DBE), etc.).
Health	Decrease exposure to local pollution sources, reduce serious injuries and fatalities on the transportation system, and promote physical activity across the lifespan, inclusive of those with disabilities, especially through transportation means.
Social Equity	Promote transportation solutions that focus on and prioritize the needs of underserved communities most affected by poverty, air pollution and climate change, and promote solutions that integrate community values with transportation safety and performance while encouraging meaningful public involvement in the transportation decision making process.

Grant Program Considerations

The Grant Program supports related State and federal mandated initiatives. The Plans and Programs listed below should be considered in grant application development. Definitions and links to these resources can be found in Appendix A.

Caltrans Strategic Plan

The Strategic Plan is a declaration of the Caltrans vision and mission, core values, strategic imperatives, and six goals to deliver a world-class transportation system for one of the nation's most populous, innovative, and diverse states:

- Safety first
- Cultivate excellence
- Enhance and connect the multimodal transportation network
- Strengthen stewardship and drive efficiency
- Lead climate action
- Advance equity and livability in all communities

This plan guides and informs the development of the Sustainable Transportation Planning Grant Program. Competitive applications will articulate how they will assist in achieving the Caltrans vision and mission, the six strategic goals above.

California Transportation Plan 2050

The California Transportation Plan (CTP) 2050 is a long-range transportation plan, updated every five years pursuant to state and Federal law, and is statutorily required to be fiscally unconstrained:

- Defines a vision for the future transportation system, establishes new statewide priorities, and guides Caltrans and partner agencies in implementing its recommendations
- Identifies strategies and policies that are required to make transparent and transformational transportation decisions
- Recognizes the unique transportation needs and interests of urban, suburban, rural, and Tribal communities
- Guides transportation decision makers at all levels of government, while emphasizing the importance of shared responsibility in meeting our transportation needs

The CTP does not contain projects, but policies and strategies required to close the gap between what the regional transportation plans (RTP) aim to achieve and how much more is required to meet 2050 goals. Competitive applications will discuss how proposed projects will assist in achieving the CTP 2050 vision, goals, recommendations, and the modal plans that support it.

Modal Plans that Support the California Transportation Plan

The CTP is the umbrella plan that informs and pulls together the State's long-range modal plans listed below, to envision the future system:

- Interregional Transportation Strategic Plan
- California Freight Mobility Plan
- California State Rail Plan
- California State Bicycle and Pedestrian Plan
- Statewide Transit Strategic Plan
- California Aviation System Plan

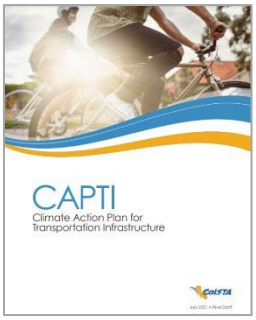
Title VI and Environmental Justice

Title VI of the U.S. Civil Rights Act prohibits discrimination on the basis of race, color, or national origin in programs or activities receiving federal financial assistance. A similar prohibition applies to recipients of state funds under California Government Code section 11135, which prohibits discrimination on the basis of race, color or national origin, as well as ethnic group identification, religion, age, sex, sexual orientation, genetic information, or disability.

Caltrans integrates Title VI as well as environmental justice in all activities. In the past, low-income and minority communities disproportionately bore many of the negative impacts of transportation projects, which they continue to feel the consequences from today. It is the goal of environmental justice to ensure that when transportation decisions are made, low-income and minority communities have a full opportunity to participate in the decision-making process, and they receive an equitable distribution of benefits and not a disproportionate share of burdens, which contribute to poor health outcomes.

Climate Action Plan for Transportation Infrastructure

The Climate Action Plan for Transportation Infrastructure (CAPTI) details how the state recommends shifting and investing billions of discretionary transportation dollars annually to aggressively combat and adapt to climate change while supporting public health, safety and equity. CAPTI builds on executive orders signed by Governor Gavin Newsom in 2019 and 2020 targeted at reducing greenhouse gas (GHG) emissions in transportation, which account for more than 40 percent of all emissions, to reach the state's ambitious climate goals. Competitive grant applications will discuss how proposed projects will assist in implementing the CAPTI Investment Framework, Guiding Principles, and align with the Implementation Strategies and Key Actions.

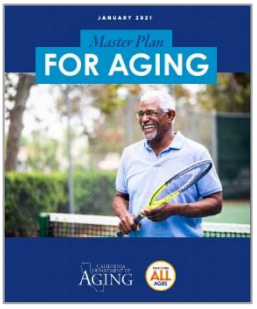


California Climate Adaptation Strategy

The California Climate Adaptation Strategy, mandated by Assembly Bill 1482 (Gordon, 2015), links the state's existing and planned climate adaptation efforts, showing how they fit together to achieve California's six climate resilience priorities. The Strategy is organized around outcome-based priorities, enabling a coordinated, integrated approach to building climate resilience. The Strategy shows how the state's efforts fit together to deliver on six priorities for climate resilience action in California: Strengthen Protections for Climate Vulnerable Communities; Bolster Public Health and Safety to Protect Against Increasing Climate Risks; Make Decisions Based on the Best Available Climate Science; Build a Climate Resilient Economy; Accelerate Nature-Based Climate Solutions and Strengthen Climate Resilience of Natural Systems; Partner and Collaborate to Leverage Resources. Competitive grant applications will discuss how proposed projects consider climate resilience and align with the California Climate Adaptation Strategy.

Master Plan for Aging

The Master Plan for Aging is a blueprint for aging across the lifespan, not simply a plan for today's older adults. California's over-60 population is projected to diversify and grown faster than any other age group. In response, the Master Plan calls on all California communities to build a California for All Ages: for older Californians currently living through the many different stages of the second half of life; for younger generations who can expect to live longer lives than their elders; for communities of all ages – family, friends, neighbors, coworkers, and caregivers – surrounding older adults. Competitive grant applications will discuss specific connections and help achieve the Master Plan's five goals and twenty-three strategies to build a California for All Ages by 2030.



2. SUSTAINABLE COMMUNITIES COMPETITIVE AND TECHNICAL

Approximately $12 million in State Road Maintenance and Rehabilitation Account (RMRA) funds and $5 million in State Highway Account (SHA) funds, or a combined total of $17 million will be distributed through a competitive program to Metropolitan Planning Organizations (MPOs) with a sub-applicant(s), Regional Transportation Planning Agencies (RTPAs), cities and counties, transit agencies, and Native American Tribal Governments. **MPOs must have a sub-applicant in order to be eligible and apply to the Sustainable Communities Competitive and Technical grants.**

Approximately $3 million will be set-aside for a technical project sub-category. In accordance with the recent release of the guidance documents for the implementation of Senate Bill 743 (SB 743, Chapter 386, Statutes of 2013), there is a current need for improved tools to measure VMT and induced travel and to develop and implement VMT mitigation programs.

Approximately $500,000 will be set-aside for Native American Tribal Governments.

Funding distribution for the competitive program will depend on the quality and number of applications.

2.1 Purpose and Specific Objectives

The purpose of the Sustainable Communities grants is to fund local and regional multimodal transportation and land use planning projects that further the region's RTP SCS/APS (where applicable), contribute to the State's GHG reduction targets, and assist in achieving the Caltrans Mission and Grant Program Objectives, which must be considered when preparing the grant application.

A minimum threshold of 50 percent of Sustainable Communities Competitive and Technical Grants has been identified for projects that benefit underserved communities, which includes Native American Tribal Governments and rural communities (for transportation planning purposes, rural is defined as all areas of the State that are not included in urbanized areas of 50,000 in population or greater; refer to Appendix C. Caltrans/Regional Agency Boundaries Map, which indicates rural areas). For purposes of the grant program, acceptable underserved communities definitions are described in Appendix A and include:

- Rural communities of 50,000 or less and outside of urbanized areas
- Native American Tribal Governments
- Regionally/locally defined underserved communities
- At or below 80% Assembly Bill 1550 (Gomez, Statutes of 2016)
- At or above 75% California Department of Education, Free or Reduced Priced Meals Data
- At or above 75% CalEnviroScreen Version 4.0
- At or below 25% California Healthy Places Index (HPI)

Sustainable Communities Competitive and Technical applicants must demonstrate how the project fits every aspect of the following Specific Objectives, as appropriate for the applicant and project type:

- Encourage local and regional multimodal transportation and land use planning that furthers the region's RTP SCS/APS (where applicable). For applicants not in an MPO region,

address how the project encourages local and regional multimodal transportation and land use planning that advances sustainability

- Contribute to the State's GHG reduction targets and other State goals, including but not limited to, the goals and best practices cited in the 2017 RTP Guidelines
- Address the needs of underserved communities through robust public engagement
- Assist in achieving the Caltrans Mission and Grant Program Objectives (See Chapter 1.2).

Sustainable Communities Technical project types do not require extensive public engagement due to their technical nature, but they will explain and demonstrate:

- How the public will be involved at later stages of the planning process
- How they will collaborate with and involve appropriate stakeholders with technical expertise to review and validate quantification assumptions and methods
- How stakeholders will be involved in the application and Scope of Work

Technical project applications are scored under the same criteria as all other project types, but they are grouped with other technical projects, and they compete at the same level. Refer to Chapter 2.2 for Example Technical Project Types. Applicants should contact their Caltrans District listed in Appendix D to help decide which grant category is the best fit for their project.

Below is a list of Appendix A. Guidance, Tools, and Resources to assist applicants in preparing a competitive grant application that is consistent with the Grant Program Objectives, Grant Program Considerations, and Specific Objectives.

- Advance Transportation Related GHG Reduction Project Types/Strategies
- Addressing the Needs of Underserved Communities
- Public Health Resources
- Active Community Engagement
- Integrated Housing, Land Use and Transportation Planning
- Promote the Region's RTP SCS/APS (where applicable) and State Planning Priorities, and Climate Adaptation Goals
- Climate-Ready Transportation

2.2 Example Project Types

The examples below are organized in the following grant project types: Active Transportation; Corridor and Freight; Social Equity; Integrated Housing, Land Use, and Transportation; Multimodal; Safety; Technical; and Transit.

Active Transportation

- Active transportation plans, including bicycle, pedestrian, and trail master plans
- Plans for bike parking facilities
- Rural planning studies or plans that provide rural counties the ability to develop active transportation plans with a rural context-sensitive focus and allow for rural regions to contribute to the State's GHG reduction targets
- Studies or plans that include a temporary built environment demonstration, e.g., tactical urbanism

Corridor and Freight

- Comprehensive Multimodal Corridor Plans
- Corridor enhancement studies
- Studies or plans related to zero emissions vehicle goods movement
- Freight/goods movement plans and studies
- Local or regional corridor plans
- Studies and plans that can help to quantify and highlight the value and importance of the rural State transportation system which connects large urban centers to rural open space, State and federal lands, and recreation and agriculture hubs.
- Studies and plans to mitigate for impacts to the rural transportation system due to increased interregional tourism and visitor traffic
- Modeling improvements that address SB 743 implementation and induced travel (see Sustainable Communities – Technical grant-specific objectives in Chapter 2.1)
- Complete Streets plans that consider last-mile freight
- Curbside freight management plans
- Sustainable freight plans
- Agriculture goods movement plans
- Freight/supply chain resiliency studies

Social Equity

- Community Needs Assessments
- Health and transportation studies, including health equity transportation studies and other plans that incorporate health into transportation planning
- Studies to improve access to social services and other community destinations for underserved communities
- Studies, plans or planning methods that address environmental justice issues in a transportation related context
- Congestion pricing studies including plans that enhance social equity and avoid inequitable cost burdens
- Planning to remove or reduce barriers created by transportation infrastructure such as highways, overpasses and underpasses, that create disconnected communities
- Studies or plans to ensure that infill and transit-oriented development benefits existing residents and businesses, low-income and underserved communities, and minimizes displacement
- Outreach to educate underserved communities on mode shifts to electric forms of transportation, as part of a plan or study as appropriate
- Student internships for rural agencies and/or underserved communities

Integrated Housing, Land Use, and Transportation

- Studies, plans or planning methods that assist transportation agencies in creating sustainable communities and transit-oriented development

- SCS/APS development
- Studies that promote greater access between affordable housing and job centers
- Station area planning
- Integration of transportation and environmental planning
- First Mile/Last Mile project development planning
- An update to a general plan land use element or zoning code that increases development opportunities around key transportation corridors or nodes
- Creation of a Transit-Oriented Development overlay zone or other special zoning district around key transportation corridors or nodes
- Studies, plans, and policies that address land use conflicts with major transportation corridors such as major highways, ports, shipping and freight corridors, etc. that are near sensitive land uses such as homes, schools, parks, etc. or potentially impacted by climate change

Multimodal

- Complete Streets plans or multimodal transportation plans
- Long range transportation plans for tribal governments
- Studies, plans or planning methods that advance a community's effort to reduce single occupancy vehicle trips and transportation related GHG through strategies including, but not limited to, advancing mode shift, demand management, travel cost, operational efficiency, accessibility, and coordination with future employment and residential land use
- Context-sensitive streetscapes or town center plans
- Studies that evaluate accessibility and connectivity of the multimodal transportation network
- Shared mobility services planning studies
- Community outreach plans for park-and-ride lots

Safety

- Bike and pedestrian plans with a safety enhancement focus, including Vision Zero plans
- Community to school studies or safe routes to school plans
- Traffic calming and safety enhancement plans

Technical

- Transportation modeling studies or planning activities that address SB 743 implementation and induced travel, active transportation, emerging technology, public health, VMT and other impacts
- Planning for zero or near zero emission vehicles
- Electric vehicle charging infrastructure network planning
- Transit planning for zero emission bus fleets
- Planning for autonomous vehicles
- Road or parking pricing studies
- Transportation Demand Management studies
- Commute trip reduction studies and plans

- Data collection/data sharing initiatives
- Integration of transit, new emerging technologies, and shared mobility services
- Educational outreach as part of a plan or study as appropriate, e.g., for mode shifts to electric forms of transportation

Transit

- Identification of policies, strategies, and programs to preserve transit facilities and optimize transit infrastructure
- Transit planning studies related to accessible transit, paratransit, mobility management, etc.
- Studies, plans, or outreach for school public transit, school pool ridesharing
- Strategies to increase transit ridership
- Studies or plans that evaluate commuter rail or multi-modal connectivity
- Studies or plans that evaluate first and last mile transit connectivity

2.3 Eligible and Ineligible Activities and Expenses

Eligible Activities and Expenses

Eligible activities must have a transportation nexus per the California Constitution, Article XIX Section 2 and 3. Applicants need to consult with Caltrans district staff for more information on whether costs are eligible for funding.

Some examples of eligible costs include:

- Data gathering and analysis
- Report writing and the development of associated graphics
- Planning consultant procurement
- Advertising for consultant procurement
- Advertising for public workshops, e.g., flyers, paid media ads
- Travel expenses (See Chapter 6.5 for details)
- Up to 30 percent design or conceptual drawings
- Equipment (as defined in 2 CFR Part 200.33)[1] purchases must remain under $5,000 or depreciation will need to be taken in to account when the grant project is completed since equipment could have future uses. *2 CFR Part 200.436*[2] provides the criteria for depreciation.
- Community surveys, meetings, public workshop room rental, charrettes, focus groups
- Virtual outreach activities and on-line meetings

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[1] Electronic Code of Federal Regulations, 2 Code of Federal Regulations, Part 200.33, 2020, https://www.ecfr.gov/on/2017-01-03/title-2/subtitle-A/chapter-II/part-200/subpart-A/subject-group-ECFR2a6a0087862fd2c/section-200.33

[2] Govinfo, 2 Code of Federal Regulations, Part 200.436, 20, https://www.govinfo.gov/app/details/CFR-2022-title2-vol1/CFR-2022-title2-vol1-sec200-436

- Bilingual services for interpreting and/or translation services for meetings
- Community/stakeholder advisory groups
- Light snacks and refreshments for public workshops (no full meals), subject to Caltrans approval
- Project administration (up to 5 percent of the grant is allowed, i.e., quarterly reports, invoicing, and kick-off meeting with Caltrans)

Ineligible Activities and Expenses

Some activities, tasks, project components, etc. are not eligible under these grant programs. If an application has any of the following elements, it will be disqualified.

Ineligible activities and expenses include:

- Environmental studies, plans, or documents normally required for project development under the National Environmental Policy Act or the California Environmental Quality Act
- Engineering plans and design specification work
- Project Initiation Documents
- Program or project implementation
- Repurposing unspent grant funds (not applicable to Sustainable Communities Formula)
- Application development to pursue construction funds/project implementation
- RTPs or updates to the RTP, excluding SCS/APS development
- Construction projects, capital costs, such as the building of a facility, or maintenance
- Office furniture purchases, or other capital expenditures
- Decorations, e.g., for public workshop events
- Acquisition of vehicles or shuttle programs
- Organizational membership fees
- Incentives for public participation, e.g., full meals, prizes, freebies, promotional/marketing items, stipends
- Charges passed on to sub-recipient for oversight of awarded grant funds
- Other items unrelated to the project

2.4 Tips for Successful Sustainable Communities Grant Applications

Criteria for Successful Sustainable Communities Grant Applications

Some guidance is provided below however, it is not intended to be all inclusive.

- Integrate Grant Program Considerations (See Chapter 1.2)
- Advance transportation related GHG emission reduction project types/strategies (i.e., mode shift, demand management, travel cost, operational efficiency, accessibility, and coordination with future employment and residential land use, etc.)
- Identify and address deficiencies in the multimodal transportation system, including the needs of environmental justice and underserved communities, including Native American Tribal Governments and rural communities

- Encourage stakeholder collaboration
- Involve active community engagement
- Coordinate transportation, housing, and land use planning
- Result in funded and programmed multimodal transportation system improvements

General Tips

- Some sections of the grant application may seem redundant when discussing underserved community engagement, overall public engagement, and stakeholder involvement. Although the general public and underserved communities are stakeholders for any project, for application purposes, the strategy, and methods for engaging these groups will be different, as described below.
    - Overall public engagement will describe the general strategy to engage the public at large.
    - Underserved communities engagement will explain how the project will go above and beyond business as usual or what is statutorily required to address the specific needs of underserved communities and use unique methods to involve these groups in the decision-making process. Refer to Appendix A. Active Community Engagement, which includes case studies for examples of equitable community engagement.
    - Stakeholder engagement will explain how partner agencies, businesses, and/or non-profit community-based organizations will be involved throughout the project.
- Consult with your district representative for technical assistance before the application deadline.
- Use the Samples and Checklists provided for the Application, Scope of Work, and Cost and Schedule.
- Include Caltrans as an active partner in the study.
- Provide tailored letters of support and project area photographs to enhance the application. If applicants/supporters do not have the time/resources to provide tailored letters of support, a petition signed by supporters in a simple table format that lists the supporters **and** specifically how supporters will benefit the proposed project will suffice.

Project Description

Concisely describe the project. Explain "What parties are involved, the proposed major milestones, and why the project is necessary."

Project Justification

- Clearly define and explain the transportation problem or deficiency that the project will attempt to address and how the project will address the problem. Why is it critical to address the problem now? Make the case for a critical need that the project will address and support it with verifiable data, if available.
- Explain how the project affects underserved communities. The tools in Appendix A are intended to help applicants define an underserved community in the project area. Please cite data sources, the tools used, and include a comparison to the statewide thresholds that are established in each tool.

- If the applicant is a Native American Tribal Government or a rural area (outside of the urbanized areas with 50,000 in population or greater) of the State, describe population characteristics such as demographics, location, and size.

Grant Specific Objectives

Demonstrate how the project fits every aspect of the Grant Specific Objective, as appropriate for the applicant and project type. Some guidance is provided below; however, it is not intended to be all inclusive. Applications should reference Appendix A for Resources to Advance Sustainable Communities Grant Specific Objectives.

Successful applications should include:

Planning for Housing, Housing Element Compliance, and Prohousing Designation

- To avoid a deduction of 5 points, applicants must demonstrate how they integrate housing planning into their policies, programs, and project, or commit to coordinate housing and transportation in future policies and programs throughout the application (e.g., narrative and scope of work). See Chapter 2.2 for a list of example projects that coordinate housing, land use, and transportation.
- To be eligible for a grant award, city and county primary/sub-grant applicants are required to submit:
    1. A housing element adopted by the local government to the Department of Housing and Community Development (HCD), and HCD must find the adopted housing element in substantial compliance with state housing element law pursuant to Government Code Section 65585.
    2. Annual Progress Reports (APRs) to HCD for at least the previous two years, 2021 and 2022.
- City or county primary/sub-applicants will receive a high recommendation from HCD if they have a Prohousing Designation, which can be earned by adopting local policies that facilitate the planning, approval, and construction of housing. The HCD Prohousing Designation Program provides incentives to cities and counties in the form of additional points or other preference in the scoring of competitive housing, community development, and infrastructure programs. For HCD Prohousing Designation Program information and how to develop a competitive application, refer to Appendix A, *Integrated Housing, Land Use, and Transportation Planning*.

IMPORTANT TIPS:

- ✓ City and county primary/sub-grant applicants are required to submit:
    1. A housing element adopted by the local government to HCD.
    2. Annual Progress Reports to HCD for at least the previous two years, 2021 and 2022.

Note: Charter cities are not exempt from this specific program requirement and must submit an Annual Progress Report for the calendar years mentioned above.

Community Engagement

- Refer to Appendix A for Community Engagement Best Practices.
- Evidence of additional public outreach measures that promote access to decision-making and program implementation for all segments of the community, including special needs populations, underserved communities, and a variety of socio-economic groups (e.g., households across the income and employment spectrum, ethnically and racially diverse households).
- The application narrative should outline specific outreach strategies that will be utilized, considering the current COVID-19 environment.
- Tailored letters of support with electronic signatures from community-based organizations or public advocacy groups to demonstrate their support or involvement in identifying the issues that the proposed project is attempting to address.
- If applicants/supporters do not have the time/resources to provide tailored letters of support, a petition electronically signed by supporters in a simple table format that indicates specifically how supporters will benefit the proposed project will suffice.

Integrated Housing, Land Use, and Transportation Planning

- Application narrative and any relevant supporting or illustrative data should describe how the proposed project integrates and connects land use and transportation, including how transportation and land use agencies or jurisdictions are actively collaborating on the project in all project phases.
- Competitive grant applications should demonstrate how the project furthers this coordinated and integrated approach to planning. For example:
    - Demonstrate how the project will support or align with the region's Regional Early Action Planning (REAP)[3] grant investments or other regional planning or implementation efforts. REAP 2.0 seeks to accelerate infill housing development, reduce Vehicle Miles Traveled (VMT), increase housing supply at all affordability levels, affirmatively further fair housing, and facilitate the implementation of adopted regional and local plans to achieve these goals. Eligible uses include projects that invest in infrastructure to expand active transportation and fund and implement parking and transportation demand management programs or ordinances.

HELPFUL TIPS:

Tailored letters of support from local agencies that not only provide support for the project, but also confirms that the proposed project:

- ✓ Helps to implement the RTP SCS/APS and/or State priorities
- ✓ Involves a coordinated approach to integrating land use and transportation in all phases of project planning and implementation.

[3] REAP Website: Programs: Active | California Department of Housing and Community Development

- Describe how the project aligns with state housing policies and goals by serving a community within ½ mile of a transit station or stop that has received a positive Prohousing Designation Program score, certified by HCD.
- Explain how the project is located in an area that has earned a Prohousing Designation and positive scores for Prohousing Enhancement policies from HCD. Jurisdictions supporting integrated housing, land use, and transportation planning may have policies that include Prohousing Enhancement Factors, which represent a multi-faceted approach to planning objectives, are consistent with state priorities, go beyond state law, etc. Competitive applications may also identify a jurisdiction's policies that promote housing development and reduce VMT. For information about the HCD Prohousing Designation Program and how applicants can develop a competitive application with Prohousing Enhancement Factors or VMT reducing policies, refer to Appendix A, *Integrated Housing, Land Use, and Transportation Planning.* HCD will highly recommend awards for City and county primary/sub-applicants that earn this designation.

Project Management

- **Scope of Work**: Refer to the Scope of Work Checklist in Appendix B.
- **Cost and Schedule**: Refer to the Cost and Schedule Checklist in Appendix B.

3. SUSTAINABLE COMMUNITIES FORMULA

$12.5 million will be distributed to the MPOs on a formula basis. The formula funds for the MPOs will reflect the same formula used to distribute Federal Highway Administration (FHWA) Metropolitan Planning PL funds.

The FHWA PL formula has three components:

1. A base allocation
2. A two-part population component which distributes funds by the proportion of the total population of each MPO based on California Department of Finance estimates each January
3. An Air Quality component based on the proportion of federal Congestion Mitigation Air Quality funds to total programmatic FHWA PL funds

3.1 Purpose and Specific Objectives

The purpose of the Sustainable Communities Formula is to fund local and regional multimodal transportation and land use planning projects that further the region's RTP SCS/APS (where applicable), contribute to the State's GHG reduction targets, and assist in achieving the Caltrans Mission and Grant Program Objectives (See Chapter 1.2).

The intent of the Sustainable Communities Formula Grants is to carry out the objectives of the region's RTP SCS/APS (where applicable) and the RTP Guidelines Appendices K and L.

The specific objectives, eligibility requirements, and performance considerations for the Sustainable Communities Formula Grants awarded to MPOs are consistent with the Sustainable Communities Competitive Grants.

The intent of the Sustainable Communities Formula Grants is to carry out the objectives of the region's RTP SCS/APS (where applicable) and the RTP Guidelines Appendices K and L. In addition, MPOs are strongly encouraged to administer Sustainable Communities Formula funding in a transparent manner and maintain non-profit eligibility, consistent with the legislative intent of SB 1 - The Road Repair and Accountability Act of 2017.

3.2 Guidance and Approval Process

Minimum Eligibility Criteria

MPOs should meet the following minimum eligibility criteria to apply for Sustainable Communities Formula grants:

- Of the Consolidated Planning Grant, FHWA PL carryover is at or below 100 percent of the annual FHWA PL allocation
- Have an RTP SCS/APS that meets the SB 375 GHG reduction targets
- Meet civil rights and environmental justice obligations, as summarized in Section 4.2 of the RTP Guidelines

If an MPO does not meet the minimum eligibility criteria listed above by **April 30, 2024**, their allocation will be redistributed to the remaining MPOs that are eligible and apply for the Sustainable Communities Formula Grants.

IMPORTANT NOTE:

✓ If an MPO does not meet the minimum eligibility criteria, their allocation will be redistributed to the remaining MPOs that are eligible and apply for the Sustainable Communities Formula Grants.

Annual Draft Overall Work Program (OWP) Development and Approval Process

Sustainable Communities Formula Grants are part of the annual draft Overall Work Program (OWP) development and approval process. The draft OWP process includes meaningful consultation with Caltrans district staff and the Headquarters Office of Regional and Community Planning (ORCP). MPOs are responsible for including a draft Work Element(s) for Sustainable Communities Formula Grant funds in the draft FY 2024-24 OWP and sending a list of activities using the provided template to Caltrans, no later than **March 1, 2024**. Draft OWPs are submitted to the district Regional Planning Liaison who will coordinate with ORCP. The draft Work Element(s) should include an explanation of how the project supports the Sustainable Communities Grant Specific Objectives and provide the same level of detail included in the grant application Scope of Work and Cost and Schedule for the Sustainable Communities Competitive Grants. The Work Element name and number must remain unchanged until the project(s) is completed. If Work Elements do not provide enough detail, MPOs will need to submit the competitive grant application Scope of Work and Cost and Schedule. More information and detailed requirements are outlined in the *SB 1 Guidance for OWPs and Requests for Reimbursements*, available upon request.

3.3 Example Project Types

MPOs have flexibility for how the Formula Grant allocation is administered. For example, MPOs may use these funds for a regional competitive grant program, integrated land use and transportation planning activities related to developing their SCS/APS, carrying out the best practices cited in the RTP Guidelines, or a combination thereof. If an MPO uses Formula Grant funds to administer a regional grant program, the MPO must submit their grant program criteria and list of eligible applicants and sub-applicants to the Caltrans district and ORCP. This step is to ensure the MPO's grant program aligns with the Caltrans Sustainable Communities Competitive Grants, including city and county housing element compliance. MPOs will also submit a list of awarded grants to the Caltrans district and ORCP. MPOs should coordinate the submittal of this information with the Caltrans district and ORCP to avoid delays for releasing the call-for-projects and grant awards. For additional example project types, refer to Chapter 2.2.

3.4 Eligible and Ineligible Activities and Expenses

Refer to Chapter 2.3 for eligible and ineligible activities and expenses.

3.5 Formula Grant Allocation Estimates

The following funding table estimates how formula funds may be distributed to each MPO, contingent upon meeting the minimum eligibility criteria:

Sustainable Communities Formula Grants	
Metropolitan Planning Organization	**Total Formula Grant Allocation**
Tahoe Metropolitan Planning Organization	$160,750
Madera County Transportation Commission	$164,209
Kings County Association of Governments	$162,943
Shasta Regional Transportation Agency	$163,172
Butte County Association of Governments	$180,569
Merced County Association of Governments	$197,424
San Luis Obispo Council of Governments	$195,962
Tulare County Association of Governments	$246,944
Santa Barbara County Association of Governments	$224,579
Stanislaus Council of Governments	$291,053
San Joaquin Council of Governments	$341,671
Kern Council of Governments	$374,899
Association of Monterey Bay Area Governments	$315,267
Fresno Council of Governments	$407,484
Sacramento Area Council of Governments	$774,991
San Diego Association of Governments	$1,021,553
Metropolitan Transportation Commission	$2,106,140
Southern California Association of Governments	$5,170,390
Total	**$12,500,000**

4. CLIMATE ADAPTATION PLANNING

Climate change adaptation aims to anticipate and prepare for climate change impacts to reduce the damage from climate change and extreme weather events. Adaptation is distinct from, but complements, climate change mitigation, which aims to reduce GHG emissions. This funding is intended to advance adaptation planning on California's transportation infrastructure, including but not limited to roads, railways, bikeways, trails, bridges, ports, and airports.

The State-funded Climate Adaptation Planning grants ($31.9 million) will support tribal, local, and regional identification of transportation-related climate vulnerabilities through the development of climate adaptation plans, as well as project-level adaptation planning to identify adaptation projects and strategies for transportation infrastructure. Applicants at all stages of adaptation planning efforts including those who have not yet started adaptation work are encouraged to apply.

Climate adaptation planning projects are defined by:

- Identification of transportation system vulnerabilities and climate-related risks to existing transportation infrastructure, including resilience improvement plans.
- Identification of adaptation planning projects that address climate risk impacts to existing transportation infrastructure including sea level rise, storm surge, changes in temperature and precipitation.
- Planning for specific climate projects that can be programmed in existing local or regional transportation plans.

4.1 Purpose and Specific Objectives

California's climate leadership has made the ambitious commitment to reduce greenhouse gas emissions and facilitate a transition to a carbon neutral economy. However, as made clear by the impacts already affecting California and the recent IPCC report, impacts of climate change are occurring sooner than expected and they disproportionately affect the most vulnerable among us (See Appendix A. for IPCC report). Many impacts, such as increased wildfires, droughts, landslides, rising sea levels, floods, severe storms, heat waves, and impacts to wildlife, are already occurring already and are expected to become more frequent and severe.

Climate change is increasingly impacting the State's transportation system. Adaptation efforts will enhance the resiliency of the transportation system to better withstand climate impacts. The overarching goal of this grant program is to support planning actions at local and regional levels that advance climate change adaptation efforts on the transportation system, especially efforts that serve the communities most vulnerable to climate change impacts. Taking steps now to adapt to climate change will protect public health and safety, infrastructure, and the California economy into the future.

Caltrans awarded three cycles of local adaptation planning grants allocated through the passage of SB 1. This program operated from FY 2017-18 through FY 2019-20 and was able to fund innovative tribal, local, and regional adaptation planning grants across California. Examples of the completed projects supported by the SB 1 Climate Adaptation Planning Grant Program can be found on the California Adaptation Clearinghouse's case study[4] page. The current funding in this program aims to build upon the successful SB 1 program to further advance transportation adaptation planning.

[4] Adaptation Clearinghouse's case study website: https://resilientca.org/challenges/

Equity, including regional representation, will be considered when awarding projects. A minimum threshold of 50 percent of the funds has been identified for projects that benefit underserved communities, which includes Tribal, local, regional, and rural communities (for transportation planning purposes, rural is defined as all areas of the State that are not included in urbanized areas of 50,000 in population or greater; refer to Appendix C. Caltrans/Regional Agency Boundaries Map, which indicates rural areas). For purposes of the grant program, acceptable underserved communities definitions are described in Appendix A and include:

- Rural communities of 50,000 or less and outside of urbanized areas
- Native American Tribal Governments
- Regionally/locally defined underserved communities
- At or below 80% Assembly Bill 1550 (Gomez, Statutes of 2016)
- At or above 75% California Department of Education, Free or Reduced Priced Meals Data
- At or above 75% CalEnviroScreen Version 4.0
- At or below 25% California Healthy Places Index (HPI)

Furthermore, up to 10% of the funds ($3.9 remaining) will be set-aside for Native American Tribal Governments.

Climate Adaptation Planning grant applicants must demonstrate how the project fits the Grant Specific Objectives listed below, as appropriate for the applicant and project type. Additional resources (guidance, data sources, etc.) to assist in achieving these objectives can be found in Appendix A:

Applicants are required to demonstrate how the proposed effort will accomplish one or more of the following:

- Identify specific transportation infrastructure vulnerabilities[5] to climate change impacts.
- Identify adaptation strategies and specific actions to remedy identified climate-related vulnerabilities, including short-, medium-, and long-term strategies that will address the overall risk for the entire service life of the asset or capital project using the best available science and guidance.
- Include economic analysis and/or cost-benefit analysis of identified adaptation strategy or strategies when applicable.

Applicants must also demonstrate how the proposed effort will accomplish one or more the following:

- Identify benefit(s) to underserved communities, including transit-dependent populations.
- On-going collaboration and partnerships between sectors and jurisdictions, across levels of government at a regional scale.
- Identify co-benefits of the adaptation work, such as benefits to public health, natural ecosystems, air quality, social equity, the economy, or reductions in greenhouse gas emissions. Projects prioritizing nature-based solutions through natural and green infrastructure planning and adaptation strategies will be prioritized.

[5] Transportation infrastructure includes, but is not limited to, roads, railways, bikeways, trails, bridges, ports, and airports. Vulnerable transportation infrastructure is transportation infrastructure that is susceptible to the impacts of climate change (e.g., a pedestrian-use trail that cuts through a forested area that is expected to see increased fire risk due to climate change).

- Consistency with priorities and goals of the 2021 California State Adaptation Strategy, as well as any applicable local/regional resilience planning, and that the effort will identify ways to incorporate transportation-related climate adaptation needs into existing transportation plans.
- Projects must include a multistakeholder process that provides an opportunity for meaningful community engagement from communities potentially impacted by any projects identified or developed as part of the planning grant.

Competitive applicants will demonstrate one or more of the following:

- Alignment with or augmentation of existing plans, including climate action plans/adaptation plans, hazard mitigation plans, safety elements of general plans, resilience improvement plans, and/or Certified Local Coastal Programs[6], that will lead to the identification and development of capital projects that can be programmed as part of local or regional transportation plans. Projects should follow State Guidance on Adaptation Planning (see Appendix A) or be aligned with local plans.
- Collaboration and partnerships with diverse external stakeholders such as businesses, non-governmental agencies, community-based organizations, Federal, state, or local agencies, and community residents.
- Consideration of the adaptation needs of environmental resources in proximity to the transportation system such as coastal resources including but not limited to tidal marsh or beaches, wildlife connectivity, wetlands, or fish passage needs.
- Consideration of public access and Complete Streets' needs.

4.2 Example Project Types

Caltrans aims to fund a variety of project types from a diverse pool of applicants to respond to these climate impacts. Applicants who have adaptation planning efforts underway, as well as those who have not yet started adaptation planning, are encouraged to apply.

The examples below are provided to illustrate the range of projects that may be appropriate for the grant program, as well as to provide ideas to potential applicants. The project types range from initial vulnerability assessment and broad planning efforts to project-level planning needs, for instance through local studies on natural hazards to inform a future project. Proposed projects are not constrained by the examples below.

- **Climate Vulnerability and Risk Assessments** (identification of climate vulnerabilities and risks to transportation infrastructure)

- **Planning for extreme weather events,** which could include:
  - Evacuation planning.
  - Identifying communities and individuals with inadequate access to transportation options (e.g., survey to determine number and location of transit dependent residents).
  - Planning for increased transportation options (e.g., multimodal) in evacuation corridors.
  - Planning for roadway warning systems for extreme weather events.

[6] More information about Certified Local Coastal Programs and whether a project is located in this area can be found on the Coastal Commission's website and further verified by reaching out to Coastal Commission staff at the applicable Coastal Commission District office. https://coastal.ca.gov/lcps.html

  - Planning and evaluating for decentralized energy storage needs for electric vehicle charging infrastructure to safeguard against loss of power and impacts to electric vehicles due to climate-related grid disruptions.

- **Transportation Infrastructure Adaptation and Resilience Improvement Plans, and/or integration of transportation adaptation planning into existing plans** such as a climate mitigation or adaptation plan, Certified Local Coastal Program, Hazard Mitigation Plan, General Plan (including compliance with Senate Bill 379 requirements (Jackson, Chapter 608, Statutes of 2015)), **or other related planning efforts, including project-level planning for capital projects**. For instance, this can include:
  - Prioritization of adaptation needs and strategies in a given region/location.
  - Project-level planning that can be programmed through an existing local or regional transportation plan, such as evaluating infrastructure resilience to climate impacts, especially projects that integrate natural infrastructure or provide multiple benefits. Specific examples could include: adaptation strategies related to realigning/relocating transportation infrastructure impacted by sea level rise; providing transit shelters with shade, water, or other means of cooling in locations expected to see temperature increases; preparing for increased landslide risk; etc.

- **Natural and green infrastructure planning** (e.g., wetlands restoration along transportation corridors to protect transportation infrastructure from flooding and storm impacts, identifying and removing barriers to habitat and wildlife connectivity.)

- **Technical feasibility studies required to advance project-level adaptation planning,** for instance coastal hazards analysis at a potential adaptation project location, or a precipitation study that incorporates future climate risk.

- **Technical assistance projects for under-resourced and climate vulnerable communities to perform climate adaptation planning.**

- **Development of educational resources, trainings and workshops for local jurisdictions and transportation service providers on any of the above listed adaptation planning activities.**

4.3 Eligible and Ineligible Activities and Expenses.

Eligible activities must have a transportation nexus per the California Constitution, Article XIX Section 2 and 3. Applicants need to consult with Caltrans district staff for more information on whether costs are eligible for funding.

Eligible Activities and Expenses

Please consult with Caltrans district staff for clarification regarding specific eligible activities or expenses. Example eligible costs include:

- Staff time
- Consultant time
- Up to 30 percent design or conceptual drawings
- Data and geospatial analysis
- Report writing and the development of associated graphics
- Community surveys, meetings, charrettes, and focus groups
- Bilingual services for interpreting and/or translation services for meetings
- Community/stakeholder advisory groups

- Project-specific staffing
- Web application development and dashboard
- Light snacks and refreshments for public workshops (no full meals), subject to Caltrans approval

Ineligible Activities and Expenses

Some activities, tasks, project components, etc. are not eligible under this grant program. If an application has any of the following elements, it will be disqualified. Ineligible activities and expenses include:

- Projects without a transportation nexus
- Project Initiation Documents
- Environmental studies, plans, or documents normally required for project development under the National Environmental Policy Act or the California Environmental Quality Act
- Engineering plans and design specification work
- Regional Transportation Plans (RTP) or updates to the RTP
- Construction projects or capital costs, such as the building of a facility, or maintenance
- Purchasing of office furniture or other capital expenditures
- Decorations (e.g., for public workshop events)
- Acquisition of vehicles or shuttle programs
- Organizational membership fees
- Incentives for public participation, e.g., "Stuff We All Get" (SWAG), full meals, prizes, freebies, promotional/marketing items, stipends
- Charges passed on to sub-recipient for oversight of awarded grant funds
- Other items unrelated to the project

4.4 Tips for a Successful Climate Adaptation Planning Grant Application

Strong applications will integrate all aspects of the grant program's purpose and specific objectives listed above. Additionally, strong applications will support statewide goals and objectives currently being implemented by the State of California, including the Grant Program Considerations (see Chapter 1.2).

Some guidance is provided below; however, it is not intended to be all inclusive.

Criteria for Successful Climate Adaptation Planning Grant Applications

- Clearly demonstrate how the project promotes climate change adaptation planning on the California transportation system and how the project aligns with the grant specific objectives.
- Partner with Caltrans to identify and address statewide, interregional, or regional transportation adaptation needs in the State highway system (or multimodal transportation system for transit-focused and/or active transportation projects.
- Strengthen government-to-government relationships.

- Demonstrate that the proposed planning effort will lead to adaptation project funding proposals and/or programmed system improvements. This can include advancing planning to lead to project development through development of a cost estimate, pursuing a technical feasibility study for adaptation options, and/or developing a conceptual design.
- Identify and address deficiencies in the multimodal transportation system, including the needs of environmental justice and underserved communities, including Native American Tribal Governments and rural communities.
- Encourage stakeholder collaboration and include active community engagement.
- Promote the region's RTP SCS (where applicable), State planning priorities (Government Code Section 65041.1), and climate adaptation goals (State Adaptation Strategy).
- Demonstrate that the proposed planning effort will use the best available science for climate change projections.
- For proposed planning efforts in the California Coastal Zone, demonstrate that all analyses and final deliverables will be consistent with the applicable Certified Local Coastal Program, California Coastal Act (for projects in the Coastal Commission's retained jurisdiction), and Coastal Commission guidance documents on sea level rise, environmental justice, and Tribal community engagement.

General Tips

- Refer to existing State guidance on climate adaptation planning to ensure alignment with State direction, State data, and guidance, including the California Adaptation Planning Guide, and resources that can be found on the State Adaptation Clearinghouse.
- Consult with your district representative for technical assistance before the application deadline.
- Use the Samples and Checklists provided for the Application, Scope of Work, and Cost and Schedule.
- Provide tailored letters of support and photos of project area as relevant to enhance the application. Project supporters should describe why they support the project and how they would benefit from the project. If applicants/supporters do not have the time/resources to provide tailored letters of support, a petition signed by supporters in a simple table format that lists the supporters and specifically how supporters will benefit the proposed project will suffice.
- Include Caltrans as an active partner in the study, as applicable.
- Some sections of the grant application may seem redundant when discussing underserved community engagement, overall public engagement, and stakeholder involvement. Although the general public and underserved communities are stakeholders for any project, for application purposes, the strategy and methods for engaging these groups will be different, as described below.
    - Overall public engagement will describe the general strategy to engage the public at large;
    - Underserved communities' engagement will explain how the project will go above and beyond business as usual to address the specific needs of underserved communities and use unique methods to involve these groups in the decision-making process; and
    - Stakeholder engagement will explain how partner agencies, businesses, and/or

non-profit community-based organizations will be involved throughout the project.

Project Management

- **Scope of Work**: Refer to the Scope of Work Checklist in Appendix B.
- **Cost and Schedule**: Refer to the Cost and Schedule Checklist in Appendix B.

5. STRATEGIC PARTNERSHIPS

$1.5 million in FHWA State Planning and Research (SPR) Part 1 funds and $3 million in Federal Transit Administration (FTA) Section 5304 funds, or a combined total of $4.5 million, will be distributed through a competitive program to MPOs and RTPAs. Funding distribution for the competitive program will depend on the quality and number of applications.

5.1 Purpose and Specific Objectives

Strategic Partnerships are intended to fund planning projects that partner with Caltrans to address needs on or connecting to the State Highway System (SHS), while the transit sub-category will address multimodal planning projects that focus on transit.

The objectives of the Strategic Partnerships and Strategic Partnerships - Transit grants are to:

- Strengthen government-to-government partnerships
- Accomplish the Federal Planning Factors
- Achieve the Caltrans Mission and the Grant Program Objectives

5.2 Federal Planning Factors

1. Support the economic vitality of the metropolitan area, especially by enabling global competitiveness, productivity, and efficiency
2. Increase the safety of the transportation system for motorized and non-motorized users
3. Increase the security of the transportation system for motorized and non-motorized users
4. Increase accessibility and mobility of people and freight
5. Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns
6. Enhance the integration and connectivity of the transportation system, across and between modes, for people and freight
7. Promote efficient system management and operation
8. Emphasize the preservation of the existing transportation system
9. Improve the resiliency and reliability of the transportation system and reduce or mitigate stormwater impacts of surface transportation
10. Enhance travel and tourism

5.3 Example Project Types

Example Project Types - Strategic Partnerships

- Studies that identify interregional, inter-county, and/or statewide mobility and access needs
- Comprehensive Multimodal Corridor Plans
- Corridor performance/preservation studies
- Studies that evaluate transportation issues involving ground access to international borders, seaports, airports, intermodal facilities, freight hubs, and recreational sites
- Development of planning activities intended to result in investment in sustainable transportation projects
- Enhanced tools to capture GHG benefits of Operations and System Management projects
- Integration of transportation and economic development
- Planning for sustainable freight
- Planning for transportation safety
- Studies for relinquishment of state routes
- Statewide or interregional research or modeling tools
- Transportation demand management plans
- System investment prioritization plans
- Assessment and integration of new technology
- Complete street plans that consider last-mile freight
- Curbside freight management plans
- Agriculture goods movement plans
- Freight/supply chain resiliency studies

Example Project Types - Strategic Partnerships Transit

- Identification of policies and procedures to integrate transit into the transportation system and planning process
- Statewide transit planning surveys and research
- Identification of policies, strategies, and programs to preserve transit facilities and optimize transit infrastructure
- Projects that evaluate accessibility and connectivity of the multi-modal transportation network
- Transit technical planning studies to optimize system performance
- Studies or plans that evaluate commuter rail or multi-modal connectivity
- Studies or plans that evaluate first and last mile transit connectivity

5.4 Eligible and Ineligible Activities and Expenses

Eligible Activities and Expenses

Eligible activities must have a transportation nexus per the California Constitution, Article XIX Section 2 and 3. Please consult with Caltrans district staff for more information on whether costs are eligible for funding.

Some examples of eligible costs include:

- Data gathering and analysis
- Planning consultant procurement
- Advertising for consultant procurement
- Advertising for public workshops, e.g., flyers, paid media ads
- Virtual outreach activities and on-line meetings
- Travel expenses (See Chapter 6.5 for details)
- Up to 30 percent conceptual drawings and design
- Equipment (as defined in 2 CFR Part 200.33)[7] purchases must remain under $5,000 or depreciation will need to be taken in to account when the grant project is completed since equipment could have future uses. 2 CFR Part 200.436[8] provides the criteria for depreciation, at the Govinfo website.
- Community surveys, meetings, public workshop room rental, charrettes, focus groups
- Bilingual services for interpreting and/or translation services for meetings
- Community/stakeholder advisory groups
- Light snacks and refreshments for public workshops (no full meals), subject to Caltrans and federal approval
- Project administration (up to 5 percent of the grant is allowed, i.e., quarterly reports, invoicing, and kick-off meeting with Caltrans)

Ineligible Activities and Expenses

Some activities, tasks, project components, etc. are not eligible under these grant programs. If an application has any of the following elements, it will be disqualified. Ineligible activities and expenses include:

- Environmental studies, plans, or documents normally required for project development under the National Environmental Policy Act or the California Environmental Quality Act
- Engineering plans and design specification work
- Project Initiation Documents

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[7] Electronic Code of Federal Regulations, 2 Code of Federal Regulations, Part 200.33, 2020, https://www.ecfr.gov/on/2017-01-03/title-2/subtitle-A/chapter-II/part-200/subpart-A/subject-group-ECFR2a6a0087862fd2c/section-200.33

[8] Govinfo, 2 Code of Federal Regulations, Part 200.436, 2022, https://www.govinfo.gov/app/details/CFR-2022-title2-vol1/CFR-2022-title2-vol1-sec200-436

- Program or project implementation
- Repurposing unspent grant funds
- Consultant mark-ups
- Application development to pursue construction funds/project implementation
- RTPs or updates to the RTP
- Economic development plans or studies
- Land use plans or studies
- General Plans or updates to elements
- Construction projects, capital costs, such as the building of a facility, or maintenance
- Office furniture purchases, or other capital expenditures
- Decorations, e.g., for public workshop events
- Acquisition of vehicles or shuttle programs
- Organizational membership fees
- Incentives for public participation, e.g., full meals, prizes, freebies, promotional/marketing items, stipends
- Charges passed on to sub-recipient for oversight of awarded grant funds
- Other items unrelated to the project

5.5 Tips for Successful Strategic Partnerships Grant Applications

Criteria for Successful Strategic Partnerships Grant Applications

- Partner with Caltrans to identify and address statewide, interregional, or regional transportation deficiencies in the State highway system (or multimodal transportation system for transit-focused projects)
- Strengthen government-to-government relationships, and
- Result in programmed system improvements

General Tips

- Refer to Appendix A. Multimodal System Planning guidance documents in the development of proposed corridor plans/studies, freight plans/studies, and other multimodal system planning documents.
- Consult with your district representative for technical assistance before the application deadline.
- Use the Samples and Checklists provided for the Application, Scope of Work, and Cost and Schedule.
- Include Caltrans as an active partner in the study.
- Provide tailored letters of support and project area photographs to enhance the application. Project supporters should describe why they support the project and how they would benefit from the project.
- If applicants/supporters do not have the time/resources to provide tailored letters of

support, a petition signed by supporters in a simple table format that lists the supporters and specifically how supporters will benefit the proposed project will suffice.

Project Summary

- Concisely describe the project in less than 150 words. Explain "What parties are involved, the proposed major milestones, and why the project is necessary."

Project Justification

- Clearly define and explain the transportation problem or deficiency that the project will attempt to address. Why is it critical to address the problem now? Make the case for a critical need that the project will address and support it with verifiable data, if available.

Grant Specific Objective

Demonstrate how the project fits every aspect of the Grant Specific Objective, as appropriate for the applicant and project type.

Project Management

- **Scope of Work:** Refer to the Scope of Work Checklist in Appendix B.
- **Cost and Schedule :** Refer to the Cost and Schedule Checklist in Appendix B.

6. GRANT PROJECT ADMINISTRATIVE REQUIREMENTS

The content of this chapter should be notably considered in the development of grant applications as it lays the foundation for what to expect when applying for these grant funds. Upon award, grantees will receive more specific guidelines including administrative and reporting requirements.

6.1 Coordination with Caltrans

Caltrans is committed to be an active partner. If awarded a grant, the applicant should include Caltrans district staff when planning both technical advisory and community meetings. In addition, Caltrans district staff will help to ensure that the approved Scope of Work, Cost and Schedule, and project funding will be maintained throughout the life of the contract. Applicants are also recommended to engage Caltrans district staff throughout the entire grant life, when applicable.

Caltrans may contact grantees to participate in peer exchange forums to promote information sharing and best practices.

If an agency does not demonstrate adequate performance and timely use of funds, Caltrans may take appropriate actions, which can include termination of the grant.

6.2 Third Party Contracts

The agreements between a grantee and a sub-applicant/recipient, consultant, or sub-consultant are often referred to as "third party contracts." An eligible sub-applicant should be identified by an eligible applicant at the onset of the application. Eligible sub-applicants/recipients may be added to an application after award with prior Caltrans approval. If a grantee or a sub-recipient is going to hire a consultant to perform work during the project, then proper procurement procedures must always be used.

Grantees may use their agency's procurement procedures as long as they comply with the State Contracting Manual, Chapter 5, the Local Assistance Procedures Manual, Chapter 10, and the terms of the agreement with Caltrans. In addition, work can only be contracted if it has been stated in the applicant's Scope of Work and Cost and Schedule. A grantee is fully responsible for all work performed by its sub-recipient, consultant, or sub-consultant. Caltrans solely enters into a contract directly with the grantee; therefore, the grantee is responsible to ensure that all third parties adhere to the same provisions included in the contractual agreement between Caltrans and the grantee.

All government funded consultant procurement transactions must be conducted using a fair and competitive procurement process that is consistent with the State Contracting Manual, Chapter 5,[9] the Local Assistance Procedures Manual, Chapter 10,[10] and the terms of the agreement with Caltrans. All documentation of third-party contract procurements must be retained, and copies of

[9] California State Contracting Manual Volume 1, Chapter 5, 2018, https://www.dgs.ca.gov/OLS/Resources/Page-Content/Office-of-Legal-Services-Resources-List-Folder/State-Contracting

[10] Caltrans Local Assistance Procedures Manual, Chapter 10, 2020, https://dot.ca.gov/programs/local-assistance/guidelines-and-procedures/local-assistance-procedures-manual-lapm

all agreements must be submitted to Caltrans. For more information on third party contracting, visit the State Contracting Manual and the Local Assistance Procedures Manual Websites.

6.3 Quarterly Reporting

Quarterly Progress Reports (QPR) are required to be submitted for each State FY quarter after the grant recipient has received a Notice to Proceed letter. The table below illustrates the State FY timeframes for submitting the QPR to Caltrans district staff.

Quarterly Progress Report Timeframes			
Quarter 1	**Quarter 2**	**Quarter 3**	**Quarter 4**
July – September	October – December	January – March	April – June

For MPOs and RTPAs, the progress and expenditure of each awarded grant project must be included as part of the OWP Quarterly Progress and Expenditure Report. If this method of reporting is not adequately satisfied, Caltrans staff will require separate quarterly reports for each awarded grant project.

All other primary grant recipients shall submit progress reports every quarter for each awarded grant project. Caltrans district staff will provide the brief report form and due dates.

6.4 Integrated Climate Adaptation and Resiliency Program (ICARP) Case Studies

Caltrans and the Governor's Office of Planning and Research are sharing the lessons learned from this grant opportunity to inform other existing or new state grant programs. To this end, Climate Adaptation Planning primary grant recipients will prepare a final case study/write-up upon grant completion to be included in the ICARP Clearinghouse (described in Appendix A., Pages 70-71), which was developed to share information, resources, and case studies with local and regional jurisdictions. Previous case studies can be found on the ICARP Case Study website[11]. These case studies will be used to develop guidance for adaptation work in the future. Caltrans will share progress reports with the ICARP Technical Advisory Council at regular intervals.

Climate Adaptation Planning grant recipients are also invited and encouraged to request technical assistance support from the ICARP program, including bringing key challenges or lessons learned to the Technical Advisory Council for their input. Caltrans staff will provide ICARP contact information upon request.

Final Case Study Requirements:

- Include images and GIS files of maps, when applicable
- Emphasize processes or results that can be adapted or replicated for use in multiple jurisdictions or in various parts of the state
- Document the underserved community's involvement throughout the entire process of the proposed project and tools used to capture this information

[11] ICARP Case Study website: https://resilientca.org/case-studies/

6.5 Invoicing and Financial Requirements

Pre-Award Audit

The Sustainable Communities grants are available in amounts up to $700,000, Strategic Partnerships grants are up to $500,000 and Climate Adaptation Planning grants are up to $3,000,000. However, any awarded grant in excess of $250,000 may require a pre-award audit. The pre-award audit is to ensure that recipients of State or federal funds maintain adequate financial management systems prior to receiving the funds. Pre-award audits may be required of new grantees, agencies that have not recently been audited, agencies that have undergone prior audits with significant weaknesses or deficiencies in their financial management systems, or those determined to be a higher risk to Caltrans. If a pre-award audit is needed, the local Caltrans district office will contact the grantee to facilitate the appropriate action.

Accounting Requirements

Grantees and sub-applicants/recipients are required to maintain an accounting system that properly records, and segregates incurred project costs and matching funds by line item. The accounting system of the grantee, including its sub-applicants and subcontractors, must conform to Generally Accepted Accounting Principles that enable the determination of incurred costs at interim points of completion and provides support for reimbursement payment vouchers or invoices sent to or paid by Caltrans. Allowable project costs must comply with 2 Code of Federal Regulations (CFR), Part 200. It is the grantee's responsibility, in conjunction with Caltrans district staff, to monitor work and expenses to ensure the project is completed according to the contracted Scope of Work and Cost and Schedule. Grantees must monitor work and costs to ensure invoices are submitted on a regular and timely basis (monthly or quarterly as milestones are completed). Grantees must communicate with their local Caltrans district office to ensure any issues are addressed early during the project period.

Local Match

All grant project tasks/activities require a grant amount and a local match, except a grant amount for administrative Tasks 01, 02 is optional. The local match is a financial requirement that demonstrates the grantee/local agency is vested in the project.

Because the local match is part of the total project cost, the local match can only fund eligible grant activities. Therefore, grant recipients must fund ineligible activities with funds other than the local match.

The local match can be all cash, all third-party in-kind contributions, or a combination of the two. The minimum local match is a percentage of the total project cost (i.e., minimum local match amount plus the grant amount) and is identified in the Cost and Schedule at the Task level.

Beginning with FY 2021-22, grantees can provide a tapered local match, which allows grantees to vary the required local match ratio for each task and with every Request for Reimbursement. Applicants must identify if they will utilize the tapered match on the Cost and Schedule. Grantees agree to satisfy the total local match amount by the grant expiration date.

Local Match Sources

- **Sustainable Communities Competitive and Technical**
  Federal toll credits, FHWA PL, and FTA Section 5303, and Sustainable Communities Formula are ineligible match sources; otherwise, any source of funds may be used if the proposed grant work is an eligible activity for the local match fund source.
- **Sustainable Communities Formula**
  Federal toll credits are an ineligible match source; otherwise, any source of funds may be used if the proposed grant work is an eligible activity for the local match fund source. If MPOs are matching with federal Consolidated Planning Grant (CPG) funds (i.e., FHWA PL or FTA Section 5303), the work must all be eligible. However, federal approval is required as CPG objectives may differ and must be aligned with Sustainable Communities Formula specific objectives and 23 CFR Part 450 requirements.[12]
- **Climate Adaptation Planning**
  Federal toll credits, FHWA PL, and FTA Section 5303, and Sustainable Communities Formula are ineligible match sources; otherwise, any source of funds may be used if the proposed grant work is an eligible activity for the local match fund source.

  Local match is not required for Native American Tribal Governments.
- **Strategic Partnerships and Strategic Partnerships – Transit**
  Any non-federal source of funds may be used if the proposed grant work is an eligible activity for the local match fund source. If MPOs are matching with Sustainable Communities Formula funds, the objectives for each grant must be in alignment. Caltrans approval is required.

Cash Match

- Staff time from the primary applicant counts as cash match. Staff time charged to a specific project that has been funded and or reimbursed, cannot be used to meet the match requirement for another project.
- Sub-applicant staff time, if reimbursed, is considered cash match. If donating their time, it is considered in-kind.
- Revenue sources for local cash match can include local sales tax, special bond measures, private donations, private foundations, etc.

Third-Party In-Kind Match

Third party in-kind contributions are typically goods and services donated from outside the primary grantee's agency and can be counted towards the minimum local match requirement. Examples of third-party in-kind contributions is the value of donated:

- Public outreach materials
- Interpreter Services
- Facilities
- Equipment
- Advertising
- Student volunteers and other stakeholder staff time
- Other goods and services

[12] Title 23, Code of Federal Regulations, Part 450,

https://www.govinfo.gov/content/pkg/CFR-2004-title23-vol1/pdf/CFR-2004-title23-vol1-part450.pdf

The Third-Party In-Kind Valuation Plan is required to itemize and place value on donated goods and services. It must be submitted to Caltrans for approval only if the grant application is awarded. The Third-Party In-Kind Valuation Plan Checklist and Template can be found in Appendix B.

In addition:

- The value of third-party in-kind contributions must be directly benefiting and specifically identifiable to the project.
- Minimum wage standards for student workers or Caltrans pay rates for equal-level volunteers are acceptable base values of volunteer time.
- Third-party in-kind contribution information must be identified on the Grant Application Cover Sheet, the Cost and Schedule, and the project specific Work Element in the OWP (if applicable).

Minimum Local Match Requirements

Applicants/grantees will be held responsible for any local commitments above the minimum requirement included in the grant application and will be made part of the grant agreement with Caltrans. Once the agreement is executed, any decrease to local match commitments above the minimum required amount will require Caltrans approval through an amendment. The example shown in the following table illustrates the minimum local match requirement based on a grant request of $300,000. Applicants must use the Local Match Calculator[13] to ensure the correct amounts are reflected on the Grant Application Cover Sheet and the Cost and Schedule.

Minimum Local Match Requirements (Percentage of Total Project Cost)			
Grant Program	**Grant Request**	**Local Match**	**Total Project Cost**
Sustainable Communities, Climate Adaptation Planning, and Strategic Partnerships –Transit	**88.53%** Example: $300,000	**11.47%*** Example: $38,868	**100%** Example: $338,868
Strategic Partnerships	**80%** Example: $300,000	**20%** Example: $75,000	**100%** Example: $375,000

*Climate Adaptation Planning local match is not required for Native American Tribal Governments.

Indirect and Direct Costs

Direct costs are those costs that can be identified specifically with a particular final cost objective, such as a state award, or other internally or externally funded activity, or that can be directly assigned to such activities relatively easily with a high degree of accuracy. Costs incurred for the same purpose in like circumstances must be treated consistently as either direct or indirect costs, also known as facilities and administrative costs or overhead costs.

Indirect Costs are costs that are incurred for a common or joint purpose. These costs benefit more than one cost objective and cannot be readily identified with a particular final cost objective.

[13] Local Match Calculator posted on-line at (will download as MS Excel spreadsheet): https://dot.ca.gov/programs/transportation-planning/division-of-transportation-planning/regional-and-community-planning/sustainable-transportation-planning-grants

Reproduction costs, computer purchase, and office supplies are considered indirect costs, unless they are tied to a specific task or activity then they are considered direct costs.

Indirect Cost Allocation Plan/Indirect Cost Rate Proposal

If a grantee, including sub-recipients and third-party contractors/consultants, are seeking reimbursement of indirect costs, they must submit an Indirect Cost Allocation Plan (ICAP)or an Indirect Cost Rate Proposal (ICRP) to Caltrans. Submissions should be sent to Caltrans Internal Audits Office (CIAO) or Independent Office of Audits and Investigations (IOAI).

CIAO is responsible for the review and approval of government entities and non-profits ICAP submissions.

IOAI is responsible for the review and approval of for profit (Consultant) ICAP submissions. Consultants submit their ICAPs only when they are initially included in the contract and not on an annual basis.

IMPORTANT NOTE

- ✓ Applications must include the estimated indirect cost rate on the Cost and Schedule.

An ICAP or ICRP must be prepared and submitted yearly in accordance with 2 CFR, Part 200. Indirect costs may be sought for reimbursement only after the grantee has received ICAP/ICRP approval from CIAO. For guidance on the ICAP/ICRP submission process, visit Caltrans Internal Audit Office[14] and the Caltrans LAPM Chapter 5 Accounting/ Invoicing. [15]

Most Common Types of Indirect Cost Rates

The following are the most common types of Indirect Cost Rates:

- Fixed Rate
- Final Rate
- De Minimis Rate
- Safe Harbor Rate

Changes to the De Minimis Rate are outlined in the revised 2 CFR Part 200.414(f)[16] that became effective November 12, 2020.

Applications must include the estimated indirect cost rate on the Cost and Schedule.

Travel Expenses

Grantees may be eligible to claim travel expenses if they have been approved in the Scope of Work and Cost and Schedule. Travel expenses and per diem rates are not to exceed the rate specified by the State of California Department of Personnel Administration for similar employees (i.e., non-represented employees). Any request for reimbursement that exceeds the State rates will

[14] Caltrans Internal Audits Office, ICAP/ICRP Submission Process, 2022, https://dot.ca.gov/programs/audits/submission-review-main

[15] Caltrans Local Assistance Procedures Manual Chapter 5, 2020, https://dot.ca.gov/-/media/dot-media/programs/local-assistance/documents/lapm/ch05.pdf

[16] Electronic Code of Federal Regulations, 2 Code of Federal Regulations, Part 200.414(f), 2020, https://www.ecfr.gov/cgi-bin/text-idx?node=se2.1.200_1414&rgn=div8

be denied. The grantee is responsible for paying beyond the State rates and cannot use the local match because it is an ineligible activity.

For more information on eligible travel expenses, visit the Caltrans Travel Guide Website. [17]

Requests for Reimbursements

- Grant payments are made only as reimbursements.
- Grant reimbursements will be based on actual allowable incurred costs.
- Grant costs will be reimbursed if incurred on or after the start date and the issuance of the Notice to Proceed and before the expiration date.
- Request for Reimbursements (RFRs) must be submitted at least quarterly, but no more frequently than monthly.
- A one-time, lump sum invoice or RFR for the entire grant is not allowed.
- Grantees must pay sub-recipients and subcontractors prior to submitting an RFR to Caltrans.
- Incomplete or inaccurate RFRs will be returned for correction.
- An accounting management system generated report must accompany all RFRs.
- Refer to Chapter 9.2 to determine final RFR dates
- When requesting reimbursement of indirect costs, the following items are required as part of the submitted RFR package:
    - An approved ICAP/ICRP rate must be on file for the FY in which the costs occurred.
    - A financial management system report that segregates direct/indirect costs by fund source.
    - ICAP support document spreadsheet that identifies direct charges and rate applied to those charges.

6.6 Non-Discrimination Requirements

Title VI Non-Discrimination Requirement

The FHWA and the FTA each have requirements that recipients of Metropolitan Planning federal funds must demonstrate continued compliance with Title VI. Compliance with Title VI includes conducting meetings in a fair and reasonable manner that are open to all members of a community. Compliance reflects not only the law but is also a good policy that builds the kind of trust and information sharing upon which successful planning is done. Even where a city or county may not be receiving federal funding for transportation, the Civil Rights Restoration Act of 1987 also obligates that a city or county comply with Title VI, if it receives any other federal funding for any program. Refer to the Caltrans Title VI website[18] for more information.

Disadvantaged Business Enterprises

Successful grant applicants are expected to market contracting opportunities to all small businesses, including DBEs and Disabled Veteran Business Enterprises.

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[17] Caltrans Travel Guide, 2020, https://dot.ca.gov/programs/accounting/travel-guide

[18] Caltrans, Title IV of the Civil Rights Act of 1964, 2020, https://dot.ca.gov/programs/civil-rights/title-vi

Grant recipients of federal funds are required to report any contracting opportunities that may involve DBE participation. DBE reporting is required twice a year: April 1 and October 1. For details about DBE requirements, visit the Office of Regional Planning website.[19]

6.7 Final Product

All final reports funded through the Sustainable Transportation Planning Grant Program shall credit the FHWA, FTA, or Caltrans' financial participation on the cover or title page. An Americans with Disabilities Act of 1994 (ADA)-accessible electronic copy of all final reports shall be forwarded to the Caltrans district office responsible for the administration and oversight of the grant. There are resources to assist with development of ADA compliant documents.[20]

Any technologies or inventions that may result from the use of these grants are in the public domain and may not be copyrighted, sold, or used exclusively by any business, organization, or agency. Caltrans reserves a royalty-free, non-exclusive, and irrevocable license to reproduce, publish, or otherwise use and to authorize others to use for public purposes.

Applicants should thoughtfully develop the project title. Once a Caltrans grant agreement is executed, changes to the original grant project title are not allowed. Grantees may use an "Also Known As" (AKA), but both the AKA and the original title must be included in the final product.

Grantees must submit their final product with the final RFR to Caltrans for approval and reimbursement. Grantees will not be reimbursed for activities that are not completed, and the activity budget must be left unexpended.

6.8 Project Close-Out Survey

Once awarded grant projects are completed, grantees will complete a close-out survey to describe the successes and challenges of their project. The survey will give the opportunity to (1) highlight successes and obstacles in project implementation of the concepts identified by the planning process, (2) identify best practices in transportation planning, with an emphasis in public engagement, and (3) identify studies/plans that have been or will be funded for continued project development. Information from the survey will be compiled into a report to illustrate the value of the grant program and inform planning practitioners in their planning efforts. Caltrans' goal is to provide transparency and accountability for the program, as well as to use the survey feedback to better serve future grant applicants.

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[19] Office of Regional Planning, Disadvantaged Business Enterprise, https://dot.ca.gov/programs/civil-rights/dbe

[20] State of California Accessibility Website: https://www.ca.gov/accessibility/

California Department of Rehabilitation Accessibility Website: https://www.dor.ca.gov/Home/Accessibility

MS Office Support Video: https://support.office.com/en-us/article/video-check-the-accessibility-of-your-document-9d660cba-1fcd-45ad-a9d1-c4f4b5eb5b7d

6.9 California Public Records Act

All applications are subject to the California Public Records Act of 1968[21]. As such, applicants may be contacted by anyone who requests their grant application. While Caltrans is obligated to share applications at any time, awarded applicants should avoid a potential conflict of interest when contacted by consultants who may inquire about the grant-funded project and not give the consultant an unfair advantage for the consultant procurement process.

[21] Leg info, California Government Code, Sections 6250 - 6270.7, https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?division=7.&chapter=3.5.&lawCode=GOV&title=1.&article=1.

7. APPLICATION SUBMITTAL PROCESS

The Sustainable Transportation Planning Grant Program is highly competitive. This section provides applicants with supplemental information as well as details on required documents that must accompany an application at the time of submittal. All applicants are strongly encouraged to adhere to these requirements in order to score competitively during the application evaluation process.

7.1 Applicant Eligibility

Primary applicants must have statutory authority to conduct transportation/transit planning for their jurisdiction. Generally, the local and regional agencies have this specific authority. Native American Tribal Governments must be Federally recognized to be eligible. Refer to the public entity's bylaws to find this information.

7.2 Early Coordination and Technical Assistance for Primary Applicants

Sub-applicants are encouraged to work far in advance of the application deadline with the appropriate primary applicant to coordinate application development. It is also beneficial for sub-applicants to be informed of the appropriate primary applicant process and schedule, as they may differ slightly from those of Caltrans. RTPAs residing within MPO boundaries should also coordinate application development with the MPO, as it is critical to ensure that proposed studies align with the RTP SCS/APS for the entire MPO region and do not duplicate efforts being applied for or already awarded to the MPO.

Caltrans district staff (See Appendix D) are available during the application period to answer questions and help interested groups complete their applications.

For questions specific to the Grant Application Guide, applicants are also welcomed to contact:

Application Guide Technical Assistance	Contacts
Sustainable Communities and Strategic Partnerships	**Grant Management Branch** Caltrans Division of Transportation Planning Office of Regional and Community Planning Email: Regional.Planning.Grants@dot.ca.gov
Climate Adaptation Planning	**Julia Biggar, Climate Change Branch Chief** Caltrans Division of Transportation Planning Office of Air Quality and Climate Change Email: Julia.Biggar@dot.ca.gov
Questions about Housing Element Compliance for Sustainable Communities Competitive and Technical	**Paul McDougall** Department of Housing and Community Development Email: Paul.McDougall@hcd.ca.gov

7.3 Application Submittal Instructions

The Grant Application Guide, Application forms, and required templates are available on the Caltrans Sustainable Transportation Planning Grant Program website, at: https://dot.ca.gov/programs/transportation-planning/division-of-transportation-planning/regional-and-community-planning/sustainable-transportation-planning-grants

- All grant application packages are required to be submitted via Smartsheet
- Smartsheet features work better with Google Chrome browser
- Smartsheet progress cannot be saved. To avoid issues, follow these instructions:
  1. Complete the Application Cover Sheet in MS Word
  2. Copy and paste the Application Cover Sheet fields into the Smartsheet form
  3. Have the PDF attachment ready to upload into the Smartsheet form
- An agency may only submit one application package per Smartsheet submittal.
- An application cannot be submitted to more than one grant category.
- The required items outlined on the Grant Application Checklist in Appendix B must be submitted as a single PDF document (not to exceed 25MB); if awarded, original formats will be requested.
- All application documents must list the applicant's legal name.
- A confirmation of receipt can be sent via Smartsheet if the applicant checks the box to receive a copy of the submittal.

Submit applications via Smartsheet Form no later than
THURSDAY, JANUARY 18, 2024 BY 5:00 P.M.

Hard copies will not be accepted and late applications will not be reviewed.

Caltrans anticipated award announcements: Summer 2024

Caltrans district staff are available during the application period to answer questions and help interested groups complete their applications. Refer to Appendix D. Caltrans District Contact List for contact information.

Download the latest version of Adobe Reader DC ® to complete the application form. This version of Adobe is available free of charge.

7.4 Application Supplemental Documentation

The following documents **are not required, but enhance the overall application and typically result** in a more competitive application during the evaluation process:

Letters of Support

If submitted, letters of support must be included with the application package. Letters received separate from the application package may not be considered. The letters should be addressed to the applicant. Such letters can come from community-based organizations, local governments, regional governments, Native American Tribal governments, service agencies, and elected officials.

Graphics

Clearly labeled photographs, maps, planning diagrams, land use or design illustrations, or other relevant graphic representations of the proposed project area convey existing conditions and help to further explain the need for the grant and the priority of the proposed planning project with respect to community need. Please ensure that graphics include a text description to provide context.

The following documents are not required, but enhance the overall application and typically result in a more competitive application during the evaluation process:

- Letters of Support
- Graphics
- Safety Data
- Travel Mode Data
- Other Data

Safety Data

Statistical data such as pedestrian-vehicle injuries/crashes or fatalities resulting from lack of safe infrastructure, or other road conditions that contribute to possible injuries. This information may be obtained from police reports, transit agencies, National Highway Traffic Administration, or the Governor's Highway Safety Association.

Travel Mode Data

Data on mode share, commute patterns, accessibility for low-income and underserved populations, access to job centers, or other data to show the need and potential for mode shift to non-auto transportation modes.

Other Data

As applicable, to indicate the need and potential for reducing VMT and GHG, where available.

8. APPLICATION REVIEW PROCESS

8.1 Two-Tiered Application Review Process

This chapter provides a brief overview of the grant application review process. Grant application evaluation is a two-tiered process that consists of:

- Caltrans District Review and Evaluation
- Caltrans Headquarters (HQ) Interagency Review Committees Evaluation

Caltrans district staff conducts the first-level review of all applications for content, submission of proper documentation, overall relationship to regional and local planning efforts, and documents their evaluations. Caltrans district staff scores, prioritizes, and recommends the most highly ranked Sustainable Communities and all Strategic Partnerships applications for the next level of review with the Interagency Review Committees. Grant applications from Native American Tribal Governments, Transit Agencies, and proposed projects spanning multiple Caltrans districts or projects having a statewide significance, may also move on directly from Caltrans districts to HQ for review.

The HQ Interagency Review Committees conduct the second-level review and comprise staff from Caltrans HQ, the Federal Highway Administration, the Federal Transit Administration, the California Department of Housing and Community Development, the California Department of Public Health, the Governor's Office of Planning and Research, the Strategic Growth Council, and the California Air Resources. Caltrans HQ also coordinates with internal specialists, depending on the grant application subject matter, to provide high-level reviews of the proposed project to avoid funding duplicative efforts or efforts that are not supportive of State planning efforts. The committees for each grant category convene to develop funding recommendations that are approved by every level of Caltrans management and the California State Transportation Agency.

8.2 Application Evaluation/Scoring Process

Grant applications that address every aspect of the grant specific objectives will score higher overall. Caltrans has diverse applicants and project types, which makes it difficult to use a one-size fits all scoring rubric that would not unintentionally put some applicant/project types at a disadvantage. Therefore, applications will be scored based on how well they are able to describe the project, justify need, incorporate the grant specific objectives, and develop a Scope of Work and Cost and Schedule, all in accordance with this grant guide, samples and checklists provided, as applicable and appropriate for the applicant and project type. Once the grant review committees evaluate, rank, and select the best applications for grant funding, final recommendations are presented to Caltrans management and California State Transportation Agency for approval.

8.3 Past Performance Award Considerations

Previous Caltrans transportation planning grantee performance will be considered during the evaluation process. Applicants with a history of inadequate performance and/or unresolved past grant performance issues may be at a competitive disadvantage in the application review process. Past performance issues could include the following:

- Poor grant project management
- Lack of communication/coordination with Caltrans
- Failure to achieve grant project milestones
- Untimely invoice submittals

- Excessive balances and consistently relinquish transportation funds administered by Caltrans Planning
- Unresolved audit issues or findings
- Overall poor quality of the final grant product
- Failure to satisfy the required state and federal planning requirements including submittal and administration of OWPs, RTPs, and Transportation Improvement Programs

If an agency does not demonstrate adequate performance and timely use of funds, Caltrans may take appropriate actions, which can include denial of extenuating circumstance time extension requests and termination of the grant.

9. APPLICATION AWARD PROCESS

9.1 Award and Non-Award

Successful grant applicants will receive an award letter via email. A list of award and non-awarded grants will be posted to the Caltrans Sustainable Transportation Planning Grant Program website.

Caltrans Sustainable Transportation Planning Grant Program Website:

https://dot.ca.gov/programs/transportation-planning/division-of-transportation-planning/regional-and-community-planning/sustainable-transportation-planning-grants

Conditional Award Teleconferences

Each grantee will receive a Conditional Award Letter that outlines the grant project cost, important expiration and final invoice dates.

Caltrans district staff will schedule individual teleconferences to provide the specific and general conditions of grant acceptance that are necessary to accept grant funding, including any revisions to the grant application, Scope of Work and Cost and Schedule. Conditions may include revisions to the project Scope of Work to bolster public participation, consider land use and housing, and to coordinate with local housing and community development departments and health departments. Awardees are required to submit all supporting materials and a signed agreement or risk forfeiting the grant award.

Non-Award Teleconferences

Unsuccessful grant applicants are encouraged to request a debriefing from Caltrans. Applicants typically receive specific comments from the District/Interagency Review Committee on how to improve applications to re-apply in a future grant cycle. If the application advanced to the second-level review, HQ provides the Interagency Review Committee score, as well as how close the application was relative to the cut-off score for available grant funding. Applicants sometimes apply two or three times before they are successful due to the competitiveness of the grant program.

9.2 Contracting with Caltrans

All awarded grant funds must be under an executed agreement with Caltrans during the State FY 2024-25. The project start date depends on the method of contracting with Caltrans.

MPOs and Rural RTPAs

All MPOs/RTPAs with a current Master Fund Transfer Agreement (MFTA) must have the entire grant award and local match programmed in the FY 2024-25 OWP within 90-days of receiving the signed FY 2023-24 reconciliation letter. Due to the competitiveness of this grant program, failure to program funds may result in forfeiture of grant funds. MPOs/RTPAs should include a place-holder Work Element in the Draft FY 2024-25 OWP and satisfy specific grant conditions before the first FY 2024-25 OWP amendment. MPO/RTPAs can anticipate starting their projects in November 2024, after the OWP amendment is processed and Caltrans issues a formal Notice to Proceed.

Non-MPOs/RTPAs

Grantees that do not have a current MFTA with the Caltrans Office of Regional and Community Planning (i.e., cities, counties, transit agencies, Tribal Governments), Caltrans will contract directly with the primary grantees through the Restricted Grant Agreement (RGA) process. For grantees

that undergo the RGA contracting process, work may begin as early as November 2024, assuming the grantee has received a fully executed contract and Caltrans district staff send a formal Notice to Proceed which allows grantees to begin work.

Estimated Project Start/Expiration Dates

It is important for applicants to reflect the estimated project start date in the Scope of Work and Cost and Schedule. Project Timeline constraints for both methods of contracting with Caltrans are provided below. Grantees must consider these dates when developing the Scope of Work and Cost and Schedule:

Master Fund Transfer Agreement Project Timeline (MPOs/RTPAs Only)	
November 2024	• Anticipated start date
June 30, 2027	• Grant project end/expiration date • Reimbursable work must be completed • Grant extensions are only allowed for extenuating circumstances and may require a formal Overall Work Program (OWP) amendment
August 30, 2027	• All Final Request for Reimbursements for must be submitted no later than 60 days after the end of the fiscal year to coincide with the submission of the OWP Final Expenditure Report.
Restricted Grant Agreement Project Timeline (Non-MPO/RTPAs)	
November 2024	• Anticipated start date
June 30, 2027	• Grant project end/expiration date • Reimbursable work must be completed • Grant extensions are only allowed for extenuating circumstances and require a formal amendment.
August 30, 2027	• Final Request for Reimbursements and final products must be submitted to Caltrans for approval and reimbursement. This allows Caltrans sufficient time to comply with the State Controller's Office payment requirements.

Native American Tribal Governments

Native American Tribal Governments have the following options for contracting with Caltrans:

(1) Contracting with Tribes Directly – The authority Caltrans uses to contract with tribes directly comes from California Streets and Highways Code section 94. Caltrans requires tribes to provide a limited waiver of sovereign immunity that is very specifically limited in scope and in time to only apply to the grant contract itself (and to any possible audits). The RGA boilerplate template for Native American Tribal Governments is available upon request to help weigh the options for contracting with Caltrans.

(2) Partnering with a Regional Agency – Another mechanism for contracting with Caltrans is to collaborate with an MPO or RTPA. Caltrans can pass through grant funding to tribes for

planning projects where options or time are limited. This option uses the three-part contract, MFTA/OWP/OWPA, and is usually the quickest option to allow planning projects to get started.

(3) Transferring Funds Pursuant to 23 U.S.C. 202(a)(9) – Section 202(a)(9) of title 23, United States Code encourages cooperation between States and Tribes by allowing any funds received from a State, county, or local government to be credited to appropriations available for the Tribal Transportation Program (TTP). One potential source of such funding is funds apportioned or allocated to a State under title 23. Section 104(f)(3) allows the Secretary of Transportation to, at the request of a State, transfer among States, or to the FHWA, funds that have been so apportioned or allocated. This provision, used in conjunction with the authority under 23 U.S.C. 209(a)(9), allows State funds to be transferred to FHWA, which in turn would provide the funds to the specified Tribe.

For more information visit the FHWA website.[22]

Caltrans has successfully used the federal Section 202(a)(9) process to transfer Sustainable Communities grant funds to a Native American Tribal Government. In order to use this transfer process, an agreement would need to be in place with the FHWA or the Bureau of Indian Affairs, the Tribe, and the State that clearly identifies the project and the roles and responsibilities of all parties. Each interagency fund transfer includes 1) a fund transfer template and 2) an addendum lining out the specifics of the terms. This option requires involvement and approval by Caltrans Legal and the funds must be used for the intended purpose of the awarded Sustainable Communities grant.

[22] Federal Highway Administration, Office of Tribal Transportation , 2020 https://flh.fhwa.dot.gov/programs/ttp/documents/Funds-Transfer-Procedures-Pursuant-to-23-U.S.C.202%28a%29%289%29.pdf

APPENDICES

APPENDIX A. GUIDANCE, TOOLS, AND RESOURCES FOR PREPARING A GRANT APPLICATION

Grant Program Considerations

The Grant Application Guide incorporates guidance from many sources. The following links are provided to assist applicants in preparing a competitive grant application consistent with the grant program, specific objectives, and the Grant Program Considerations:

- Caltrans Strategic Plan
- California Transportation Plan (CTP) 2050
- Modal Plans that Support the CTP
    - Interregional Transportation Strategic Plan
    - California Freight Mobility Plan
    - California State Rail Plan
    - California State Bicycle and Pedestrian Plan
    - Statewide Transit Strategic Plan
    - California Aviation System Plan
- Title VI and Environmental Justice
- Climate Action Plan for Transportation Infrastructure
- California Climate Adaptation Strategy
- Master Plan for Aging

Caltrans Strategic Plan

The purpose of the Strategic Plan is to be a roadmap of Caltrans' role, expectations, and operations as we meet the challenges of modernizing Caltrans into a world-class Department of Transportation. The tools we use to implement this Plan are performance management, transparency, accountability, sustainability, and innovation. The Plan serves a number of functions:

- Provides clear direction for meeting statewide objectives;
- Creates and deepens strategic partnerships; and
- Provides performance measures that monitor success

https://dot.ca.gov/-/media/dot-media/programs/risk-strategic-management/documents/sp-2020-16p-web-a11y.pdf

California Transportation Plan 2050

The CTP 2050 is the State's statutorily fiscally unconstrained long-range transportation roadmap for positive change that:

- Provides a unifying and foundational policy framework for making effective, transparent, and transformational transportation decisions in California
- Addresses the varied transportation needs of urban, suburban, rural, and Tribal communities
- Emphasizes implementation and identifies a timeline, roles, and responsibilities for each plan recommendation.

The CTP does not contain projects, but policies and strategies required to close the gap between what the regional transportation plans (RTP) aim to achieve and how much more is required to meet 2050 goals. Competitive applications will discuss how proposed projects will assist in achieving the CTP 2050.

https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/ctp-2050-v3-a11y.pdf

Modal Plans that Support the California Transportation Plan

The CTP is the umbrella plan that informs and pulls together the State's long-range modal plans, described below, to envision the future system:

Interregional Transportation Strategic Plan (ITSP)

A Caltrans document that provides guidance for the identification and prioritization of interregional transportation improvements to be funded in the Interregional Transportation Improvement Program (ITIP). The ITSP analyzes the entire interregional transportation system including highways and rail. While the ITSP informs the ITIP, the purpose of the plan is to be a guiding document for all investment in the interregional transportation system regardless of funding source.

https://dot.ca.gov/programs/transportation-planning/division-of-transportation-planning/multi-modal-system-planning

California Freight Mobility Plan

A statewide, long-range plan for California's freight transportation system. Developed in collaboration with our partners, the California Freight Mobility Plan (CFMP) was developed by the California State Transportation Agency (CalSTA) and Caltrans in consultation with the California Freight Advisory Committee.

https://dot.ca.gov/programs/transportation-planning/division-of-transportation-planning/strategic-freight-planning

California State Rail Plan

A statewide plan that provides a framework for planning and implementing California's rail network for the next 20 years and beyond. The Rail Plan is a strategic plan with operating and capital investment strategies that will lead to a coordinated, statewide travel system.

https://dot.ca.gov/programs/rail-and-mass-transportation/california-state-rail-plan

California State Bicycle and Pedestrian Plan

"Toward an Active California," California's first statewide plan that lays out the policies and actions that Caltrans and its partner agencies will take to achieve the Department's ambitious statewide goals to double walking and triple bicycling trips by 2020.

https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/f0020350-activeca-final-plan-2017-05-18-a11y.pdf

Statewide Transit Strategic Plan

The plan allows the State to prepare for the expanding landscape of personal mobility choices and the integration of urban and regional transit systems with the California High Speed Rail project. The Statewide Transit Strategic Plan highlights a sustainable transportation system that supports the outcomes of the CTP, the California State Rail Plan, and the California State Bicycle and Pedestrian Plan.

https://dot.ca.gov/programs/rail-and-mass-transportation/statewide-transit-strategic-plan

California Aviation System Plan

A multi-element plan prepared by Caltrans with the goal of developing and preserving the system of publicly owned, public-use airports and to promote the development of a safe, efficient, and sustainable air transportation system that meets the integrated mobility needs of the state of California.

https://dot.ca.gov/programs/aeronautics/california-aviation-system-plan

Title VI and Environmental Justice

Title VI of the U.S. Civil Rights Act prohibits discrimination on the basis of race, color, or national origin in programs or activities receiving federal financial assistance. A similar prohibition applies to recipients of state funds under California Government Code section 11135, which prohibits discrimination on the basis of race, color or national origin, as well as ethnic group identification, religion, age, sex, sexual orientation, genetic information, or disability. Title VI specifically provides the following:

> *No person in the United States shall, on the ground of race, color, national origin, religion, sex, age, or disability be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving financial assistance from the Federal government.*

https://dot.ca.gov/programs/civil-rights/title-vi

The following tools are provided to assist grant applicants with integrating environmental justice in their proposed activities:

EJSCREEN: Environmental Justice Screening and Mapping Tool

EJSCREEN, developed by the United States Environmental Protection Agency, geospatially displays public health and environmental data and allows users to compare local data against state and national averages.

https://www.epa.gov/ejscreen

Environmental Justice Agency Assessment 2020

The California Environmental Justice Alliance completed the fifth Environmental Justice Agency Assessment, the only one in the nation to formally examine how state agencies develop, implement, and monitor environmentally related policies that particularly impact low-income communities and communities of color. The assessments in this report are made in the spirit of holding state agencies and elected officials accountable to the public, and to provide guidance on how they can make their work more equitable.

https://caleja.org/wp-content/uploads/2021/07/CEJA-Agency-Assessment-062021-FINAL-WEB.pdf

Climate Action Plan for Transportation Infrastructure

The Climate Action Plan for Transportation Infrastructure (CAPTI) details how the state recommends investing billions of discretionary transportation dollars annually to aggressively combat and adapt to climate change while supporting public health, safety and equity. CAPTI builds on executive orders signed by Governor Gavin Newsom in 2019 and 2020 targeted at reducing greenhouse gas (GHG) emissions in transportation, which account for more than 40 percent of all emissions, to reach the state's ambitious climate goals.

https://calsta.ca.gov/-/media/calsta-media/documents/capti-july-2021-a11y.pdf

California Climate Adaptation Strategy

The California Climate Adaptation Strategy, mandated by Assembly Bill 1482 (Gordon, 2015), links the state's existing and planned climate adaptation efforts, showing how they fit together to achieve California's six climate resilience priorities. The Strategy is organized around outcome-based priorities, enabling a coordinated, integrated approach to building climate resilience. The Strategy shows how the state's efforts fit together to deliver on six priorities for climate resilience action in California: Strengthen Protections for Climate Vulnerable Communities; Bolster Public Health and Safety to Protect Against Increasing Climate Risks; Make Decisions Based on the Best Available Climate Science; Build a Climate Resilient Economy; Accelerate Nature-Based Climate Solutions and Strengthen Climate Resilience of Natural Systems; Partner and Collaborate to Leverage Resources.

https://www.climateresilience.ca.gov/

Master Plan for Aging

The Master Plan for Aging is a blueprint for aging across the lifespan and outlines five goals and twenty-three strategies to build a California for All Ages by 2030. It also includes a Data Dashboard for Aging to measure progress and a Local Playbook to drive partnerships that will assist in meeting the goals of the Master Plan.

https://mpa.aging.ca.gov/

Resources to Advance Grant Specific Objectives

Applicants must demonstrate how the project fits every aspect of the Grant Specific Objective, as appropriate for the applicant and project type. The following resources are provided in this section:

- Multimodal System Planning
- Advance Transportation Related GHG Reduction Project Types/Strategies
- Addressing the Needs of Underserved Communities
- Public Health Resources
- Active Community Engagement
- Integrated Housing, Land Use, and Transportation Planning
- Promote the Region's RTP SCS/APS, State Planning Priorities, and Climate Adaptation Goals
- Climate Ready Transportation and Climate Adaptation Planning

Multimodal System Planning

The following guidance documents can be used in the development of proposed corridor plans/studies, freight plans/studies, and other multimodal system planning documents.

Comprehensive Multimodal Corridor Plan Guidelines

The California Transportation Commission developed the Comprehensive Multimodal Corridor Plan Guidelines (plan guidelines) to provide guidance to eligible Solutions for Congested Corridors Program applicants regarding the statutory requirements for comprehensive corridor plans utilized by agencies to apply for funding through the Congested Corridors Program. Applicants proposing to develop a comprehensive corridor plan are encouraged to review the plan guidelines to ensure their application and final product would align with and compete well for the Solutions for Congested Corridors Program.

https://catc.ca.gov/programs/sb1/solutions-for-congested-corridors-program/comprehensive-multimodal-corridor-plan-guidelines

Caltrans Corridor Planning Process Guide

The Caltrans Division of Transportation Planning prepared the Corridor Planning Process Guide (Guide) for use in preparing corridor planning documents. This Guide establishes a comprehensive planning approach through desired protocols and procedures to identify and implement multimodal transportation needs. It is neither intended as nor does it establish, a legal standard for these functions.

https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/system-planning/systemplanning/corridor-planning-process-guide-april-2022-a11y.pdf

Planning for Operations Strategic Work Plan

The Planning for Operations Strategic Work Plan is a statewide framework for multimodal system management planning, aims to identify the specific steps needed to implement multimodal system management planning at Caltrans and prioritize implementation actions.

https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/system-planning/systemplanning/caltrans-p4ops-strategic-work-plan-2018-a11y.pdf

Caltrans Climate Change Emphasis Area Guide for Corridor Planning

Consideration of climate change adaptation and mitigation must be included in the corridor planning process. This guidance was developed to describe how to address climate risk in the context of the Caltrans Corridor Planning Process Guide's 8 steps process.

https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/cc_ea_guide_for_corridor_planning_march2020_a11y.pdf

Active Transportation Emphasis Area Guidance

Active Transportation is one of several distinct emphasis areas to be considered in corridor plan analysis. Caltrans Active Transportation guidance has one goal – to provide corridor planners with a framework to assess and analyze the variety of Active Transportation issues that can be addressed in Corridor Plans. As the "Eight Step" process will be required to develop Corridor Plans, this Active Transportation Emphasis Area (EA) Guidance is based upon those eight steps.

https://dot.ca.gov/-/media/dot-media/programs/transportation-planning/documents/active-transportation-complete-streets/20220131active-transportation-emphasis-area-guidance-final-version-v7a11y.pdf

Advance Transportation Related GHG Reduction Project Types/Strategies

CARB 2017 Climate Change Scoping Plan, Appendix C

The California Air Resources Board (CARB) adopted the *2017 Climate Change Scoping Plan Update* which includes *Appendix C, Vibrant Communities and Landscapes – A Vision for California in 2050*, to guide how the State develops communities, preserves and protects its landscapes, and ensures that all Californians have equitable access to housing, health care, jobs, and opportunity. Competitive Sustainable Communities grant applications will demonstrate a linkage to this land use vision.

The CARB 2017 Climate Change Scoping Plan (Appendix C) also includes *Potential State-Level Strategies to Advance Sustainable, Equitable Communities and Reduce Vehicle Miles of Travel (VMT)* which outlines a list of potential additional strategies that the State could pursue to help achieve further VMT reduction, support local and regional actions already underway, and advance multiple additional goals.

While this document is intended to guide State-level actions, many of the strategies can also be implemented at a regional and local level. Sustainable Communities grant applicants are encouraged to explore these strategies and apply them, as appropriate, to proposed planning projects.

CARB 2017 Climate Change Scoping Plan, Appendix C:
https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/2030sp_appc_vmt_final.pdf

For current CARB activities and future updates on Scoping Plan efforts, visit:
https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan

Senate Bill 375

The Sustainable Communities and Climate Protection Act (SB 375) was signed in 2008. It supports the State's climate goals by helping reduce greenhouse gas emissions through coordinated transportation, housing, and land use planning.

Under the Sustainable Communities Act, the California Air Resources Board (CARB) sets regional targets for greenhouse gas emissions reductions from passenger vehicle use. CARB set targets for 2020 and 2035 for each of the 18 MPO regions.

Each of the MPO regions must prepare a Sustainable Communities Strategy/Alternative Planning Strategy (SCS/APS), as an integral part of its regional transportation plan, that contains land use, housing, and transportation strategies that, if implemented, would allow the region to meet CARB's targets. Once the SCS/APS is adopted by the MPO, CARB must review the adopted SCS/APS to accept or reject the MPO's determination that the SCS/APS, if implemented, would meet the targets.

Sustainable Communities grant applicants, where applicable, should explore their regions Sustainable Communities Strategy/Alternative Planning Strategy, and apply them, as appropriate, to proposed planning projects.

CARB SCS/APS Evaluations: https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/regional-plans-evaluations

SB 375: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=200720080SB375

Senate Bill 743

Senate Bill (SB) 743 was signed in 2013, with the intent to "more appropriately balance the needs of congestion management with statewide goals related to infill development, promotion of public health through active transportation, and reduction of greenhouse gas emissions." When implemented, "traffic congestion shall not be considered a significant impact on the environment" within California Environmental Quality Act (CEQA) transportation analysis. The CEQA guidelines have since established Vehicle Miles Traveled (VMT) as one of the measures of transportation-related environmental impact, beginning December of 2018. A key element of transportation analysis under the new guidance is forecasting induced vehicular travel.

Applicants who wish to pursue model improvements or develop VMT Mitigation Programs using Sustainable Communities Competitive Technical or Formula grants are encouraged to review available materials relating to forecasting induced travel, including those found on the Caltrans SB 743 implementation website, and refer to the example below. Refer to the Caltrans Traffic Analysis Framework for a detailed list of recommended standards for improved forecasting of induced vehicular travel.

Examples include:

- Integration of land use modeling into travel demand models, improving long-term induced travel modeling capability
- Incorporation of impacts to trip-making behaviors as a result of network improvements
- Improved congestion feed-back into existing models, or pre- and post-processing procedures
- Induced travel case studies

SB 743: http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB743

Caltrans SB 743 Implementation: https://dot.ca.gov/programs/sustainability/sb-743

Addressing the Needs of Underserved Communities

Caltrans encourages eligible applicants to apply for Sustainable Communities Competitive Grants to address transportation needs and deficiencies in underserved communities. Supporting planning projects that benefit a underserved community is a priority; therefore, a minimum threshold of 50 percent of Sustainable Communities Competitive Grants has been identified for projects that benefit underserved communities, which includes Native American Tribal Governments and rural communities (for transportation planning purposes, rural is defined as all areas of the State that are not included in urbanized areas of 50,000 in population or greater; see map in Appendix C which indicates rural areas). In sum, acceptable underserved communities definitions include:

- Rural communities of 50,000 or less and outside of urbanized areas
- Native American Tribal Governments
- Regionally/locally defined underserved communities
- At or below 80% Assembly Bill 1550 (Gomez, Chapter 369, Statutes of 2016)
- At or above 75% California Department of Education, Free or Reduced Priced Meals Data
- At or above 75% CalEnviroScreen Version 4.0
- At or below 25% California Healthy Places Index (HPI)

Grant applicants are required to provide a justification in their grant application for how the project area meets the definition of an underserved community and a description of how the project will benefit these communities, as well as how these communities will be engaged throughout the project.

The following tools, related to income level, environmental burden, and health inequities, are intended to help applicants identify the most vulnerable places that are facing disproportionate rates of economic, environmental, and health burdens. These tools must be cited in the grant application, as well as how the project area is compared to the statewide thresholds that are established in each tool.

IMPORTANT INFORMATION:

Grant applicants are required to provide a justification in their grant application for how the project area meets the definition of underserved communities and a description of how the project will benefit these communities, as well as how these communities will be engaged throughout the project.

Regionally and/or Locally Defined Underserved Communities

Regionally and/or locally defined underserved communities may be acceptable as long as statewide thresholds for the tools below are not circumvented. Applicants that use a regional or local definition should also provide data for their project, using the statewide tools below. Caltrans may not accept the regional/local definition if it is inadequately supported in the justification section of the grant application.

Assembly Bill (AB) 1550 (Gomez, Chapter 369, Statutes of 2016)

AB 1550 further enhanced the Greenhouse Gas Reduction Fund statutory requirements to invest a minimum of twenty-five percent in underserved communities and another ten percent in low-income households or communities. AB 1550 provides definitions for low-income households and low-income communities that may be considered in application development:

(1) "Low-income households" are those with household incomes at or below 80 percent of the statewide median income or with household incomes at or below the threshold designated as low income by the Department of Housing and Community Development's list of state income limits adopted pursuant to Section 50093.

(2) "Low-income communities" are census tracts with median household incomes at or below 80 percent of the statewide median income or with median household incomes at or below the threshold designated as low income by the Department of Housing and Community Development's list of state income limits adopted pursuant to Section 50093.

AB 1550: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160AB1550

California Department of Education, Free or Reduced Priced Meals (FRMP) Data

The California Department of Education maintains the complete data files pertaining to students who are eligible for FRMP. FRPM data are collected annually and can also be used to assist Sustainable Communities applicants to define their underserved community. Per SB 99 (Chapter 359, Statutes of 2013), the State's Active Transportation Program disadvantaged community's definition includes low-income schools, where at least 75 percent of students are eligible to receive free or reduced meals under the National School Lunch Program.

FRMP data files: https://www.cde.ca.gov/ds/sd/sd/filessp.asp

SB 99: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB99

CalEnviroScreen Version 4.0

CalEnviroScreen is a screening methodology that can be used to help identify California communities that are disproportionately burdened by multiple sources of pollution. CalEnviroScreen uses environmental, health, and socioeconomic information to produce a numerical score for each census tract in the state. For purposes of SB 535 (De León, Statutes of 2012), disadvantaged communities are defined as the top 25 percent scoring areas from CalEnviroScreen along with other areas with high amounts of pollution and vulnerable populations.

https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40

California Healthy Places Index (HPI)

The California Healthy Places Index (HPI) is an interactive data and mapping tool that provides a detailed snapshot of the social determinants of health across California, mapped down to the Census tract level. HPI provides comparison rankings of Census tracts statewide and an accompanying policy action guide. Therefore, the HPI can be a useful tool in prioritizing areas with high levels of social and economic disadvantage for funding, policy, and planning interventions.HPI was developed by the Public Health Alliance of Southern California in collaboration with health departments and data experts across the state. Because the HPI focuses on the social and environmental conditions that contribute to health, policy makers and local agencies can use it to identify actionable policies that would improve health in their community, such as improving transportation access, housing affordability and quality, or access to parks and open space, HPI also incorporates "decision support layers" that can be overlaid to show additional indicators such as the California Department of Public Health's (CDPH) climate change and health vulnerability indicators (see Appendix A. under Public Health Resources, **CDPH Climate Change and Health Vulnerability Indicators** for more information.).

https://healthyplacesindex.org/

Understanding the HPI Score

The HPI includes a composite score for each Census tract in the State. The higher the score, the healthier the community conditions. Each Census tract's score is converted to a percentile, which allows it to be compared to other California Census tracts. For example, an HPI percentile of 79 indicates that a Census tract has healthier community conditions than 79 percent of the Census tracts in California. HPI percentile rankings are further broken into quartiles, with percentiles below 25 typically used to indicate disadvantaged communities. Thus, lower scores can be used to demonstrate a community, or project/service area, is underserved for purposes of qualifying for the minimum threshold of 50 percent for underserved communities in this program.

In addition to the composite score and percentile ranking, applicants can review the individual domain scores or indicators themselves and explain how their project will improve one or more of these public health challenges. The numeric value and percentile ranking for these component indicators can be found either by using the live map or by accessing the data directly. See the following table for HPI examples.

These HPI tools can be accessed at:

Live Map: https://map.healthyplacesindex.org/

HPI Learning Center: https://www.healthyplacesindex.org/learning-center

HPI Examples		
Indicator	**HDI Percentile**	**How will the project improve this health challenge?**
Policy Action Area (Composite) Scores		
Neighborhood	Percentile ranking of all neighborhood-related indicators	Demonstrate how this plan will address health and transportation challenges related to neighborhood indicators (park access, supermarket access, retail density, alcohol availability and tree canopy)
Transportation	Percentile ranking of all transportation indicators	Demonstrate how this plan will address health and transportation challenges related automobile access and active commuting
Individual Indicators		
Automobile Access	XX percent	Describe how plan will increase and improve transportation access to vital destinations, goods and services for those without auto access.
Active Commuting	XX percent	Describe how the plan will improve transportation options for those without a car, specifically regarding active commuting by foot, bike, and transit in the project area.
Park Access	XX percent	Demonstrate how project will improve transportation access to parks/ open space.

For more information on the HPI, including how to calculate a score for your project area and suggested project types for improving public health, visit https://healthyplacesindex.org/.

Senate Bill 1000 (Leyva, Chapter 587, Statutes of 2016)

SB 1000 requires local jurisdictions to develop environmental justice elements in their next General Plan updates. Specifically, the environmental justice element, or the environmental justice goals, policies, and objectives in other elements, must be adopted or reviewed upon the adoption or next revision of 2 or more elements concurrently on or after January 1, 2018. Grant applicants are encouraged to describe efforts to comply with this new general plan requirement.

https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB1000

California Environmental Justice Alliance SB 1000 Toolkit

The California Environmental Justice Alliance SB 1000 Toolkit may help applicants describe their efforts to include the Environmental Justice element in their general plan updates.

https://caleja.org/2017/09/sb-1000-toolkit-release/

Governor's Office of Planning and Research (OPR) General Plan Guidelines Senate Bill 1000 Technical Advisory

The OPR General Plan Guidelines for Senate Bill 1000 provides guidance for determining whether an Environmental Justice element or equivalent is required in a local jurisdiction, including

identifying the location of disadvantaged communities (as defined in Gov. Code, § 65302, subdivision (h)(4)(A))[23] as well as the nature of their environmental burdens, health risks, and needs. It also provides guidance for community engagement when addressing Environmental Justice disadvantaged communities; and goals, policies, and programs that address the unique and compounded health risks in disadvantaged communities and prioritize improvements and programs that meet the needs of disadvantaged communities.

https://opr.ca.gov/docs/20200706-GPG_Chapter_4_EJ.pdf

Displacement/Gentrification

Transportation improvements, especially new rail lines and stations to low-income communities, can increase access to opportunities. But they can also result in much higher property values and an increase in the cost of owning and renting property, inadvertently displacing existing residents and businesses. Being forced to leave a home is a stressful, costly and traumatic life event, especially when affordable housing is so limited. There is a growing recognition of tools and strategies that can be implemented alongside community investments to reduce displacement.

Grant applicants are encouraged to reference the *2017 RTP Guidelines, Appendices K and L,* for best practices in addressing displacement of low income and underserved communities.

Transformative Climate Communities Program

The State's Transformative Climate Communities Program provides a framework for applicants to avoid displacement and may assist Sustainable Communities grant applicants in addressing displacement.

https://sgc.ca.gov/meetings/council/2022/docs/20220428-Item5a_TCC_Guidelines_Round%204_Technical%20Amendment_Clean.pdf

Implementing Senate Bill 350 (De Leon, Chapter 547, Statues of 2015) and Community Needs Assessments

Caltrans supports implementation of SB 350, the Clean Energy and Pollution Reduction Act of 2015, which establishes the State priority to reduce GHG emissions through the promotion of various clean energy policies, including widespread transportation electrification, for the benefit of all Californians. Transforming the State's transportation sector to support widespread electrification requires increasing access for all Californians, including low-income residents and those living in underserved communities, across a broad spectrum of clean transportation and mobility options to address community specific transportation needs. Caltrans is leading efforts to identify low-income residents and underserved communities' transportation and mobility needs through ongoing and potential future statewide planning processes.

In support of this State goal, Sustainable Communities applicants are encouraged to conduct local Community Needs Assessments of low-income resident and underserved communities' transportation and mobility needs to ensure feedback is incorporated in transportation planning. Community Needs Assessments include an evaluation of the following categories of transportation barriers and opportunities at the community level: (1) Access and Reliability; (2) Convenience; (3) Safety; (4) Demographic Characteristics and Community Setting; and, (5) Planning, Infrastructure and Investments.

SB 350: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB350

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23 https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=GOV&division=1.&title=7.&part=&chapter=3.&article=5.

Final Guidance Document, Low-Income Barriers Study, Part B: Overcoming Barriers to Clean Transportation Access for Low-Income Residents

In February 2018, the California Air Resources Board released the Final Guidance Document, *Low-Income Barriers Study, Part B: Overcoming Barriers to Clean Transportation Access for Low-Income Residents*. This Guidance Document provides background for SB 350 and may assist Sustainable Communities applicants with developing Community Needs Assessments as a standalone project or as part of a proposed project.

https://ww2.arb.ca.gov/resources/documents/carb-barriers-report-final-guidance-document

Public Health Resources

The following tools can be used to further describe the community's climate change and health vulnerability, and other needs, including helping to create qualitative descriptions of existing community health risks and vulnerabilities and how the proposal will address them.

Community Health Needs Assessments

Community Health Needs Assessments (CHNA) and implementation strategies are regularly conducted by county public health departments and are newly required of tax-exempt hospitals as a result of the Patient Protection and Affordable Care Act. These assessments and strategies create an important opportunity to improve the health of communities. They ensure that hospitals have the information they need to provide community benefits that meet the needs of their communities. They also provide an opportunity to improve coordination of hospital community benefits with other efforts to improve community health. By federal statute, the CHNAs must take into account input from "persons who represent the broad interests of the community served by the hospital facility, including those with special knowledge of or expertise in public health." To avoid duplicative efforts, grant applicants are encouraged to contact and coordinate with local health departments/non-profit hospitals to take advantage of information that may have been collected as part of CHNA efforts, such as low-income resident and underserved communities' transportation and mobility needs. It is important for grant applicants to connect with these public health entities for both partnership building on transportation needs for under-resourced communities, but also to not over-burden those communities with multiple assessments or efforts asking similar questions.

CDPH Climate Change and Health Vulnerability Indicators (CCHVIs)

CDPH developed the Climate Change and Health Vulnerability indicators, narratives, and data to provide local health departments and partners the tools to better understand the people and places in their jurisdictions that are more susceptible to adverse health impacts associated with climate change, specifically extreme heat, wildfire, sea level rise, drought, and poor air quality. The assessment data can be used to screen and prioritize where to focus deeper analysis and plan for public health actions to increase resilience.

The CCHVIs can be viewed on "CCHVIz", CDPH's interactive data visualization platform: https://discovery.cdph.ca.gov/ohe/CCHVIz/. The CCHVIs have also been incorporated into the HPI as decision support layers, to better integrate addressing health outcomes associated with climate change and various social determinants of health. See above for more information on the HPI.

https://www.cdph.ca.gov/Programs/OHE/Pages/CC-Health-Vulnerability-Indicators.aspx

CDPH Climate Change and Health Profile Reports (CHPRs)

The CDPH Climate Change and Health Profile Reports are designed to help counties in California prepare for the health impacts related to climate change through adaptation planning. The reports present projections for county and regional climate impacts, the climate-related health

risks, and local populations that could be vulnerable to climate effects. The information is based on available science compiled from previously published, state-sponsored research and plans.

https://www.cdph.ca.gov/Programs/OHE/Pages/ClimateHealthProfileReports.aspx

CDPH Healthy Communities Data and Indicators Project (HCI)

The goal of the HCI is to enhance public health by providing a standardized set of statistical measures, data, and tools that a broad array of sectors can use for planning healthy communities and evaluating the impact of plans, projects, policy, and environmental changes on community health. The Healthy Community Framework identifies 20 key attributes (i.e., "aspirational goals", such as "Safe, sustainable, and affordable transportation options" or "Access to affordable and safe opportunities for physical activity") of a healthy community through all stages of life, clustered in five broad categories (i.e., "domains", such as "Meets the Basic Needs of All" or "Quality and Sustainability of Environment"). HCI data indicators, narratives, and visualizations are found here.

https://www.cdph.ca.gov/Programs/OHE/Pages/HCI-Search.aspx

Integrated Transport and Health Impact Model (ITHIM)

The California version of the Integrated Transport and Health Impact Model (ITHIM) is a planning tool that answers the question of "How much benefit or harm to human health can we expect by changing the mix of active and motorized travel across a county, region, or the entire State of California?" ITHIM contrasts one travel pattern that serves as a reference with an alternative that has a different profile of fine particulate air pollution from vehicle exhaust, physical activity from walking and cycling, and injuries from traffic collisions. ITHIM calculates the change in deaths, years of life shortening and disability, and costs due to these changes in air pollution, physical activity, and traffic injuries. Grant applicants are encouraged to reference and utilize ITHIM to assess the health impacts their projects and programs.

https://skylab.cdph.ca.gov/HealthyMobilityOptionTool-ITHIM/

Health In All Policies (HiAP) Approach

The California Health in All Policies (HiAP) initiative is a collaborative approach designed to improve the health of Californians by incorporating health, equity, and sustainability considerations into policymaking across sectors. The approach recognizes that chronic illness, climate change, health inequities, and increasing health care costs are interrelated and influenced by policies, programs, and investments across sectors. The initiative provides access to tools, resources and journal articles highlighting Health in All Policies approaches, techniques, and concepts from California and beyond.

https://sgc.ca.gov/programs/healthandequity/hiap/approach.html

Active Community Engagement

Sustainable Communities Competitive Grant applications must include an explanation of how local residents and community-based organizations will be meaningfully engaged in developing the final product, especially those from underserved and low-income communities, and how the final product will address community-identified needs. Applicants are encouraged to implement, as applicable and appropriate the tips, best practices, and tools listed below:

Community Engagement Best Practices

- Refer to the following case studies that meaningfully demonstrate the expectations of equitable community engagement:
    - The community driven Carsharing and Mobility Hubs in Affordable Housing Pilots[24] offer a strong example of equitable community engagement. The equity-based project incorporated community input from start to finish through community partnership building.
    - The Mobility Equity Framework[25] should be used to assess and compare multimodal transportation options and centers community needs and shifts decision making power to the public. For successful implementation examples, refer to: (1) California Air Resources Board (CARB) Clean Mobility Options Program[26], (2) City of Portland, Oregon, Pricing Options for Equitable Mobility Project[27], and North Carolina's Transit Equity Campaign[28].
- Refer to Greenlining Institute's Six Standards for Equitable Investment[29] to implement qualitative measures of equity. These standards feature a list of approaches, ranging from the minimum to transformative approach, depending on how much time, resources, and effort are generally required because equity approaches differ in each community context and conditions.
- Refer to Greenlining Institute's Making Equity Real in Mobility[30], a toolkit of clear strategies and best practices to put equity in action
- Clarify the type of engagement will be utilized, as seen in the Public Participation Spectrum[31]. Agencies and communities need to understand where engagement level falls from the "inform" to "empower" model.
- Utilize a Participatory Budgeting (PB) planning process, as appropriate. PB is a democratic approach to public spending that meaningfully and deeply engages people in government

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[24] Carsharing and Mobility Hubs in Affordable Housing Pilots: https://greenlining.org/publications/reports/2021/clean-mobility-transportation-equity-report/

[25] Mobility Equity Framework: https://greenlining.org/publications/2018/mobility-equity-framework/

[26] CARB Clean Mobility Options Program: https://cleanmobilityoptions.org/about/

[27] Portland, Oregon, Pricing Options for Equitable Mobility Project: https://www.portland.gov/transportation/planning/pricing-options-equitable-mobility-poem

[28] North Carolina Transit Equity Campaign: https://bikedurham.org/transit

[29] Greenlining Institute's Six Standards for Equitable Investment: https://greenlining.org/wp-content/uploads/2021/03/Clean-Mobility-Equity-A-Playbook-Greenlining-Report-2021.pdf

[30] Greenlining Institute's Making Equity Real in Mobility: https://greenlining.org/wp-content/uploads/2019/08/Toolkit_Making-Equity-Real-in-Mobility-Pilot-Projects_Final-1.pdf

[31] Public Participation Spectrum: https://sustainingcommunity.wordpress.com/2017/02/14/spectrum-of-public-participation/

and the community. During PB, community members democratically decide how to spend part of a public budget, enabling them to make the fiscal decisions that affect their lives and the health of their communities.

- Seek existing community-based organizations or agencies that organize vulnerable populations, to be able to reach out and form collaborative relationships.
- Involve local health departments which can assist in reaching community-based organizations and underserved and vulnerable community members.
- Collaborate with underserved and vulnerable communities to design and implement programs, plans and policies. Robust engagement of underserved and vulnerable communities in significant agency decisions brings about better decisions through increased input from different perspectives, increases buy-in and acceptance of decisions and support for their implementation.
- Make opportunities for input accessible in terms of formats (pop-up workshops, temporary built-environment demonstrations, online, in public meetings, one on one, by mail, etc.), venues (at school and community events, community centers, libraries, transit hubs, etc.), hours (evening or weekend), and language (accessible to lay people and translated into the principal languages of the relevant communities, including accessible media such as caption videos).
- Develop a written collaboration agreement or memorandum of understanding that defines respective roles, expectations, desired outcomes, and agreements for how to work together.
- Establish an advisory group of representatives of vulnerable communities, including community leaders and give them worthwhile roles to design the public engagement process, so that community capacity is built during the collaboration process.
- Conduct targeted outreach to community groups representing special needs populations, underserved communities and a variety of socio-economic groups through various methods.
- Use a variety of outreach methods to optimize participation, such as creating and marketing user-friendly survey websites for public feedback, conducting surveys in multiple languages to collect input on local citizens' priorities, and carrying out meetings at accessible times and meeting locations (e.g., using community group buildings, hosting pop-up workshops at public venues, etc.).

Note: The applicant should increase efforts beyond basic public noticing and public hearings. Options for demonstrating additional public outreach could include, but not limited to all the above.

Additional Public Engagement Best Practices and Strategies

Public engagement has adapted to the COVID-19 pandemic with surprising results . Applicants will need to consider how to conduct public outreach and engagement during these times. Below are some resources to help applicants evaluate and develop the best strategy for public engagement.

- **Caltrans Planning Horizons, "Digital Public Engagement and Transportation: Getting It Right – Theory, Techniques and Best Practices.":** Digital engagement can greatly increase the reach of public education and involvement; many public agencies have been surprised by the positive results and substantial increase in participants.

  https://youtu.be/85t9ibR2U7Q

- **The Great Pivot - Public Engagement in the Wake of COVID-19:** Celia McAdam and Natalie Porter of AIM Consulting hosted a WTS seminar where they provided examples and strategies

for public outreach, including diverse and underserved communities, during the COVID-19 pandemic.

https://youtu.be/k2dPVqhlwvc

- **Digital Environmental Engagement Resource Catalogue:** The California Natural Resources Agency and the California Environmental Protection Agency developed a resource catalogue of online sessions on community engagement and equity. This resource catalogue comes from the "Online Environmental Engagement: Building Our Skills Together" conference. From June 2nd to 4th 2020, forty-nine panelists and approximately 1,500 registrants from California and across the nation gathered together online to discuss their successes, challenges and practical tips for online environmental engagement.

  https://resources.ca.gov/Outreach/Digital-Environmental-Engagement-Resource-Catalogue

- **Tips ad Tools to Engage Your Community in a Digital Environment:** Ensuring inclusive public participation is more challenging than ever because of physical distancing requirements, the digital divide, language access challenges and technology learning curves. With those challenges in mind, ILG offered a helpful webinar in July 2020, that featured innovative strategies for using high-tech and low-tech virtual platforms to engage residents on a variety of topics without meeting face-to face.
  https://www.ca-ilg.org/digitalengagement

- **Broadening Participation Using Online Engagement Tools:** This document provides examples and guidance to local governments interested in enhancing public participation outcomes with online engagement tools.
  https://www.ca-ilg.org/sites/main/files/file-attachments/broadening_participation_via_online_tools_final_draft_1.pdf

- **The Guide to Remote Community Engagement:** A collection of resources designed to support cities that wish to create and maintain strong, institutionalized practices of community engagement during periods of remote working and in an increasingly digital world. Refer to the article, *5 Methods for Non-Internet Based Remote Community Engagement*, for ideas on how to supplement traditional online public engagement efforts to be inclusive of residents lacking high-speed broadband internet access.
  https://medium.com/the-guide-to-remote-community-engagement

- **Virtual Public Involvement:** The U.S. Department of Transportation, Federal Highway Administration, developed this innovation spotlight to provide an overview of virtual public involvement tools that enhance and broaden the reach of public engagement efforts by making participation more convenient, affordable, and enjoyable for greater numbers of people.
  https://www.fhwa.dot.gov/planning/public_involvement/vpi/

- **Designing Parks Using Community-Based Planning:** This document inspires meaningful community engagement for future public projects. It shares methods learned through California's Statewide Park Development and Community Revitalization Program. These methods have been proven effective in urban, rural, and suburban settings.
  https://www.parksforcalifornia.org/planning_guide

Integrated Housing, Land Use, and Transportation Planning

Development patterns directly impact GHG emissions, including those from transportation between jobs, services, and housing. Improved coordination between housing and transportation can reduce commute times, increase transit ridership, lower vehicle miles traveled, lower pollution and GHG, provide greater economic opportunity, and other positive outcomes.

Housing Element Compliance

To support planning for housing California's growing population, the State Department of Housing and Community Development (HCD) reviews each local government's housing element of its general plan.

- The housing element must plan to meet the local government's existing and regional housing needs allocation and quantify and analyze the specific needs and resources available to address the housing needs.
- A housing element can also provide a mechanism to adopt efficient land-use strategies, including those that address climate change and reduce vehicle miles traveled. For example, strategies could include the promotion of affordable higher density, infill development, mixed-use development, or transit-oriented development near transit stations or transit corridors.
- Local governments are required to annually submit progress reports on the implementation of the housing element and provide a detail of production toward their projected housing needs.

For more information on:

  - Housing element requirements, see the HCD Building Blocks website at https://www.hcd.ca.gov/planning-and-community-development/housing-elements/building-blocks
  - Adopted housing element requirements, see the "Housing Element Process" section at https://www.hcd.ca.gov/planning-and-community-development/housing-elements
  - A local government's housing element compliance, see https://www.hcd.ca.gov/planning-and-community-development/housing-open-data-tools/housing-element-review-and-compliance-report
  - Annual Progress Reports, see https://www.hcd.ca.gov/planning-and-community-development/annual-progress-reports

Prohousing Designation Program

The State 2019-20 Budget Act, Assembly Bill 101 enacted the Prohousing Designation Program (Program), which enables HCD to designate local jurisdictions as Prohousing when they demonstrate policies and planning that accelerate the production of housing. To receive the Prohousing Designation, local jurisdictions must meet basic threshold requirements related to compliance with the Housing Element Law and other state housing laws and demonstrate actions worth at least 30 points spread across each of four categories of Prohousing policies: favorable zoning and land use, acceleration of housing production timeframes, reduction of construction and development costs, and providing financial subsidies. The benefit to local jurisdictions receiving the Prohousing Designation includes being given an advantage such as priority processing or additional points when applying for several competitive funding programs, including:

- Affordable Housing and Sustainable Communities
- Infill Infrastructure Grant
- Transformative Climate Communities
- Transit and Intercity Rail Capital Program

Vehicle Miles Traveled (VMT) reducing policies and the Prohousing Enhancement Factors below help indicate that a project is within a jurisdiction supporting integrated housing, land use, and transportation planning. These policies show that a jurisdictions further supports state housing priorities in promoting affordable housing, reducing development barriers, and reducing vehicle miles travelled.

Prohousing Enhancement Factors include policies that:

- Represent one element of a unified, multi-faceted strategy to promote multiple planning objectives, such as efficient land use, access to public transportation, affordable housing, climate change solutions, and/or hazard mitigation.
- Promote development consistent with the state planning priorities pursuant to Government Code section 65041.1.
- Go beyond state law requirements in reducing displacement of lower income households and conserving existing housing stock that is affordable to lower income households.
- Rezoning and other policies that support high-density development in Location Efficient Communities.

VMT reducing policies may include projects located in jurisdictions that are/have:

- Permitting missing middle housing uses (e.g., triplexes and fourplexes) by right in existing low-density, single-family residential zones.
- With density bonus programs which exceed statutory requirements by 10 percent or more.
- Increasing allowable density in low-density, single-family residential areas beyond the requirements of state Accessory Dwelling Unit law (e.g., permitting more than one ADU or JADU per single-family lot). These policies shall be separate from any qualifying policies under category (ii) above.
- Reducing or eliminating parking requirements for residential development as authorized by Government Code sections 65852.2; adopting vehicular parking ratios that are less than the relevant ratio thresholds at subparagraphs (A), (B), and (C) of Government Code section 65915, subdivision (p)(1); or adopting maximum parking requirements at or less than ratios pursuant to Government Code section 65915, subdivision (p).
- Zoning to allow for residential or mixed uses in one or more non-residential zones (e.g., commercial, light industrial). Qualifying non-residential zones do not include open space or substantially similar zones.
- Modifying development standards and other applicable zoning provisions to promote greater development intensity. Potential areas of focus include floor area ratio; height limits; minimum lot or unit sizes; setbacks; and allowable dwelling units per acre. These policies must be separate from any qualifying policies under Category (ii) above.
- Adopted a Nondiscretionary Local Approval Process for residential and mixed-use development in all zones permitting multifamily housing, established a Workforce Housing Opportunity Zone, as defined in Government Code section 65620, or a housing sustainability district, as defined in Government Code section 66200.
- Zoning more sites for residential development or zoning sites at higher densities than is required to accommodate 150 percent of the minimum regional housing need allocation for the Lower-Income allocation in the current housing element cycle.
- Priority permit processing or reduced plan check times for Accessory Dwelling Units (ADUs)/Junior Accessory Dwelling Units (JADUs), multifamily housing, or homes affordable to Lower- or Moderate-Income households.
- Adopted ordinances or implemented other mechanisms that result in less restrictive requirements than Government Code sections 65852.2 and 65852.22 to reduce barriers for property owners to create ADUs/JADUs. Examples of qualifying policies include, but are not

limited to, development standards improvements, permit processing improvements, dedicated ADU/JADU staff, technical assistance programs, and pre-approved ADU/JADU design packages.

- Measures that reduce costs for transportation-related infrastructure or programs that encourage active modes of transportation or other alternatives to automobiles. Qualifying policies include, but are not limited to, publicly funded programs to expand sidewalks or protect bike/micro-mobility lanes; creation of on-street parking for bikes; transit-related improvements; or establishment of carshare programs.
- Established pre-approved or prototype plans for missing middle housing types (e.g., triplexes and fourplexes) in low-density, single-family residential areas.
- Documented practice of streamlining housing development at the project level, such as by enabling a by-right approval process or by utilizing statutory and categorical exemptions as authorized by applicable law (Pub. Resources Code, sections 21155.1, 21155.4, 21159.24, 21159.25; Gov. Code, section 65457; Cal Code Regs., tit. 14, sections 15303, 15332; Pub. Resources Code, sections 21094.5, 21099, 21155.2, 21159.28).
- Policies that represent one element of a unified, multi-faceted strategy to promote multiple planning objectives, such as efficient land use, access to public transportation, affordable housing, climate change solutions, and/or hazard mitigation.
- Policies that promote development consistent with the state planning priorities pursuant to Government Code section 65041.1.
- Rezoning and other policies that support high-density development in Location Efficient Communities.

For more information on the Prohousing Designation Program, email HCD at ProhousingPolicies@hcd.ca.gov or visit the following HCD websites:

Program Website

https://www.hcd.ca.gov/planning-and-community-development/prohousing-designation-program

Prohousing Designation Application Status List
https://www.hcd.ca.gov/sites/default/files/docs/planning-and-community/Prohousing-Public-Application-Tracker.xlsx

Prohousing Designation Program FAQs

hcd.ca.gov/community-development/prohousing/docs/ProhousingFAQ.pdf

Promote the Region's RTP SCS/APS, State Planning Priorities, and Climate Adaptation Goals

SB 1 - The Road Repair and Accountability Act of 2017 (Beall, Chapter 5, Statutes of 2017)

The intent of additional Sustainable Communities grant funding, pursuant to SB 1 - The Road Repair and Accountability Act of 2017, is to encourage local and regional planning that furthers state goals, including but not limited to, the goals and best practices cited in the RTP Guidelines. Competitive applications will incorporate these cutting-edge planning practices into their proposed planning projects.

SB 1: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201720180SB1

2017 RTP Guidelines (Appendix K, Page 273; Appendix L, Page 309)

The California Transportation Commission adopted the 2017 RTP Guidelines for RTPAs and 2017 RTP Guidelines for MPOs which includes Appendix K – Promoting Health and Health Equity in MPO RTPs and Appendix L – Planning Practice Examples. These appendices highlight planning practices that are undertaken by large, medium, and small MPOs in both rural and urban areas throughout the State.

https://catc.ca.gov/-/media/ctc-media/documents/rtp-2017-guidelines-mpos-011817-a11y.pdf

SB 375 (Steinberg, Chapter 728, Statutes of 2008)

Caltrans supports SB 375 RTP SCS/APS efforts. Successful applications must be compatible with an existing adopted SCS/APS, where applicable, that meets the region's GHG targets, and must strongly support and aim to implement regional SCS/APS efforts. The SCS/APS planning process is intended to help communities reduce transportation related GHG emissions, coordinate land use and transportation planning, and assist local and regional governments in creating sustainable communities for residents throughout the State.

Although most rural areas of the State are not subject to SB 375 SCS/APS requirements, Caltrans still promotes the development of sustainable communities in these areas of the State and efforts to match GHG reduction targets and other goals embodied in SCS/APSs under SB 375. Eligible rural agencies are strongly encouraged to apply for Sustainable Communities Competitive Grants.

Information on SB 375-related planning efforts:

https://ww2.arb.ca.gov/our-work/topics/sustainable-communities

SB 375: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=200720080SB375

Complete Streets and Smart Mobility Framework

In recognition that walking, biking, transit, and passenger rail are integral to our vision of delivering a brighter future for all through a world-class transportation network, Caltrans also supports Complete Streets and the Smart Mobility Framework (SMF). In locations with current and/or future pedestrian, bicycle, or transit needs, Caltrans encourages applicants to consider the tools and techniques contained in the SMF as well as typical components of Complete Streets. Specifically, this might include how the project addresses components of community design, regional accessibility, place types, and priority activities to achieve smart mobility outcomes, community transition, and associated multimodal performance measures for the appropriate context of the problem. Information on these efforts can be found at:

Complete Streets

https://dot.ca.gov/programs/transportation-planning/division-of-transportation-planning/active-transportation-and-complete-streets

Smart Mobility Framework

https://dot.ca.gov/programs/transportation-planning/division-of-transportation-planning/active-transportation-and-complete-streets/smart-mobility-framework

Climate Ready Transportation and Climate Adaptation Planning

Through the Grant Program, Caltrans supports the State's broader efforts to help ensure our transportation infrastructure is climate-ready. In order to prioritize these investments, Governor Gavin Newsom signed Executive Order (EO) N-19-19 on September 20, 2019 to redouble the state's "efforts to reduce greenhouse gas emissions and mitigate the impacts of climate change while building a sustainable, inclusive economy." The EO lists California's ambitious and essential climate goals to transition to a healthier, more sustainable and more inclusive economy, including:

- Reducing greenhouse gas emissions 40 percent below 1990 levels by 2030
- Providing 100 percent of the State's electricity from clean energy sources by 2045
- Reducing methane emissions and hydrofluorocarbon gases by 40 percent
- Adding five million zero-emission vehicles to the State's roads by 2030

To help achieve these goals, the EO directs the California State Transportation Agency to leverage over $5 billion in annual state transportation spending toward transportation construction, operations, and maintenance to lower fuel consumption and greenhouse gas emissions from transportation. This includes strategies for lowering vehicle miles traveled, such as supporting housing development near available jobs, and supporting active modes of transportation such as biking and walking that also benefit public health. The EO specifically requires that the State Transportation Agency also work to mitigate increased transportation costs for low-income communities.

https://www.gov.ca.gov/wp-content/uploads/2019/09/9.20.19-Climate-EO-N-19-19.pdf

Integrated Climate Adaptation and Resiliency Program

Senate Bill 246 (Wieckowski, Chapter 606, Statutes of 2015) established the Integrated Climate Adaptation and Resiliency Program (ICARP) within the Governor's Office of Planning and Research to coordinate regional and local efforts with State climate adaptation strategies (Public Resources Code Section 71354). Grant applicants may refer to the ICARP website to explore the State Adaptation Clearinghouse, a centralized source of information and resources to assist decision makers at the state, regional, and local levels when planning for and implementing climate

adaptation projects to promote resiliency across California. Caltrans is coordinating with ICARP staff on the OPR Climate Adaptation Planning Grant Program.

ICARP Website: https://opr.ca.gov/climate/icarp/

SB 246: https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB246

Adaptation Planning Grants: https://www.opr.ca.gov/climate/icarp/grants/adaptation-planning-grant.html

California Adaptation Clearinghouse

The Adaptation Clearinghouse serves as a centralized source of information that provides the resources necessary to guide decision makers at the state, regional, and local levels when planning for and implementing climate adaptation projects to promote resiliency to climate change in California.

https://resilientca.org/

ResilientCA Adaptation Planning Map (RAP-Map)

The Integrated Climate Adaptation and Resiliency Program (ICARP)—supported through the Governor's Office of Planning & Research—contains a statewide inventory of local government adaptation and resiliency planning efforts. It is an open data tool, to inventory local government climate risk, adaptation, and resiliency planning efforts across the state and track progress towards statewide adaptation planning goals.

https://resilientca.org/rap-map/

Community Climate Resiliency

Grant applicants are encouraged to consider if the surrounding community is experiencing any specific climate vulnerabilities and how the proposed planning project aims to address specific concerns. Grant applicants should also describe how potential climate impacts are taken into consideration in the proposed planning project, such as the incorporation of natural infrastructure, and, if applicable, how the project conforms with the local implementation of SB 379 (Jackson, Statutes of 2015), Government Code Section 65302(g)(4), where cities and counties are required to address climate adaptation and resiliency strategies in the safety element of their general plan.

Defining Vulnerable Communities in an Adaptation Context, OPR Resource Guide

The Governor's Office of Planning and Research, with input from the Integrated Climate Action and Resiliency Program (ICARP) Technical Advisory Council, developed a resource guide for practitioners to use when first considering how to define vulnerable communities in an adaptation context. The document includes: (1) The ICARP Technical Advisory Council's definition of climate-vulnerable communities, (2) A summary of existing statewide assessment tools that can be used to identify vulnerable communities in a climate adaptation context, including a crosswalk with the indicators that are required elements of an SB 1000 (Leyva, Statutes of 2016) analysis; (3) Additional indicators that could be used to assess underlying vulnerability on a case-by-case basis; (4) A list of process guides that can serve to aid agencies undertaking efforts to define vulnerable communities.

https://opr.ca.gov/climate/icarp/vulnerable-communities.html

State Guidance for Adaptation Planning

2017 General Plan Guidelines, Safety Element (Ch. 4)

The General Plan Guidelines set out each statutory requirement in detail, provides OPR recommended policy language, and includes online links to city and county general plans that have adopted similar policies. The guidelines include information on how to consider climate change during general plan development/updates. In accordance with Senate Bill 379, general plans must address climate adaptation and resilience within the Safety element. Local governments are required to include a climate change vulnerability assessment, measures to address vulnerabilities, and a comprehensive hazard mitigation and emergency response strategy.

https://opr.ca.gov/docs/OPR_COMPLETE_7.31.17.pdf

California Climate Adaptation Planning Guide – local/regional agency guidance

The Adaptation Planning Guide provides guidance to support regional and local communities in proactively addressing the unavoidable consequences of climate change. It provides a step-by-step process for local and regional climate vulnerability assessment and adaptation strategy development.

https://resilientca.org/apg/

Planning and Investing for a Resilient California – State Agency guidance

Introduces a four-step process for building resilience and a set of resilient decision-making principles for state agencies when considering climate-informed infrastructure investments. These steps include identifying how climate change could affect a project or plan, conducting an analysis of climate risks, making a climate-informed decision, and tracking and monitoring progress.

https://www.opr.ca.gov/docs/20180313-Building_a_Resilient_CA.pdf

Ocean Protection Council Sea-Level Rise Guidance

The State of California Sea-Level Rise Guidance reflects advances in sea-level rise science and addresses the needs of state agencies and local governments as they incorporate sea-level rise into their planning, permitting, and investment decisions.

http://www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20180314/Item3_Exhibit-A_OPC_SLR_Guidance-rd3.pdf

California Coastal Commission Sea Level Rise Policy Guidance

This guide provides an overview of the best available science on sea level rise for California and recommended methodology for addressing sea level rise in Coastal Commission planning and regulatory actions.

https://documents.coastal.ca.gov/assets/slr/guidance/2018/0_Full_2018AdoptedSLRGuidanceUpdate.pdf

Coastal Adaptation Planning Guidance for Critical Infrastructure

This guidance from the California Coastal Commission addresses two main types of infrastructure – transportation and water – and presents six key considerations for successful adaptation planning. These considerations are accompanied by recommendations for stakeholders on how to plan effectively for the impacts of sea level rise on coastal infrastructure, a description of the regulatory framework that applies to adaptation planning for infrastructure.

https://documents.coastal.ca.gov/assets/slr/SLR%20Guidance_Critical%20Infrastructure_12.6.2021.pdf

Coastal Adaptation Planning Guidance and Environmental Justice Considerations

The Environmental Justice Policy is the Coastal Commission's framework for identifying and analyzing project impacts on underserved and disadvantaged communities. The policy is designed to achieve more meaningful engagement, equitable process, effective communication and stronger coastal protection benefits for all Californians.

https://documents.coastal.ca.gov/assets/env-justice/CCC_EJ_Policy_FINAL.pdf

Coastal Adaptation Planning Guidance and Tribal Consultation

The Coastal Commission adopted a Tribal Consultation Policy, which is intended to guide outreach and collaboration. It also helps to inform permit applicants how the Commission will review coastal development permit applications to ensure adequate Tribal consultation occurs.

https://documents.coastal.ca.gov/assets/env-justice/tribal-consultation/CCC%20Tribal%20Consultation%20Policy%20Adopted%208.8.2018.pdf

Climate Data Sources and Adaptation Plans

Cal-Adapt

Cal-Adapt is the repository for State-endorsed climate change projections, developed through the State's Climate Change Assessment efforts. Cal-Adapt offers free public access to peer-reviewed data that show climate change impacts on state infrastructure, communities, and natural resources. Find tools, data, and resources to conduct research, develop adaptation plans and build applications.

https://cal-adapt.org/

Climate Action Plans

Many California cities and counties are developing Climate Action Plans to reduce their GHG emissions. Agencies may have existing plans that include strategies or insight on potential approaches to implementing climate change considerations on the transportation network. CARB has created a webmap that can be used to identify plans created, GHG inventory information, GHG reduction targets, local strategies planned to meet these targets, and more. The second website provides a host of resources, including example Climate Action Plans and templates. This information can also be found on the Adaptation Clearinghouse.

https://webmaps.arb.ca.gov/capmap/
http://www.ca-ilg.org/climate-action-plans

Caltrans Vulnerability Assessments

To ensure the resiliency of the State Highway System, Caltrans conducted vulnerability assessments statewide. These Summary Reports and associated Technical Reports describe climate change effects in each of Caltrans' 12 districts.

https://dot.ca.gov/programs/transportation-planning/division-of-transportation-planning/air-quality-and-climate-change/2019-climate-change-vulnerability-assessments.

Local Vulnerability Assessments

If local vulnerability assessments have been developed along a corridor, their data may be interwoven with Cal-Adapt data, Caltrans Climate Change Vulnerability Assessments, and/or other vulnerability information for more granular analysis of specific local areas, particularly those in more densely populated areas or with a high density of affected transportation assets. Many of these assessments and case studies can be found on the Integrated Climate Action and Resiliency Program (ICARP) Case Studies and Examples search page (https://resilientca.org). Some transit

and rail providers in California have also developed vulnerability assessments for their 21 networks as well, which may contain detailed analysis that could be useful.

Caltrans Climate Change Adaptation Strategy Report

Through this report, Caltrans is aiming to adopt a leadership role in the process of climate change adaptation through developing a "how to" guide for integrating climate change adaptation into agency activities and decision-making. This Adaptation Strategy Report initially outlines an overall "pathway" for adopting recommendations on how Caltrans should mainstream adaptation strategies throughout functional areas and develop an approach to coordinate with partner agencies. Recognizing the important role of transit and active transportation facilities and routes, this report will develop solutions for all modes of transportation. This report also has a section focused on the incorporation of climate change considerations into System Planning documents.

https://transplanning.onramp.dot.ca.gov/downloads/transplanning/files/suscommplan/Climate%20Adaptation%20Report_May_2020.pdf

Other Relevant Datasets for Climate Planning

Protecting Californians from Extreme Heat: A State Action Plan to Build Community Resilience

A plan that outlines a strategic and comprehensive set of state actions to address extreme heat.

https://resources.ca.gov/-/media/CNRA-Website/Files/Initiatives/Climate-Resilience/2022-Final-Extreme-Heat-Action-Plan.pdf

California Water Action Plan

A roadmap for the first five years of the state's journey toward sustainable water management.

http://resources.ca.gov/docs/california_water_action_plan/Final_California_Water_Action_Plan.pdf

CALFIRE Fire Hazard Severity Zones

CALFIRE has mapped areas of significant fire hazards based on fuels, terrain, weather, and other factors, forming wildfire severity zones. There are three levels of hazard in the State Responsibility Areas: moderate, high, and very high. This analysis can provide further understanding of wildfire risk at the potential project location.

https://osfm.fire.ca.gov/divisions/community-wildfire-preparedness-and-mitigation/wildland-hazards-building-codes/fire-hazard-severity-zones-maps/

California Department of Conservation – Landslide Hazards

The California Landslide Inventory is an ongoing project to make the California Geological Survey landslide information publicly accessible.

http://www.conservation.ca.gov/cgs/geologic_hazards/landslides

State Wildlife Action Plan

The State Wildlife Action Plan includes conservation actions that respond to current and future challenges with objectives and goals that are specific, measurable, and time bound.

https://www.wildlife.ca.gov/SWAP/Final

CDFW Regional Conservation Investment Strategies

This program encourages a voluntary, non-regulatory regional planning process intended to result in higher-quality conservation outcomes and includes an advance mitigation tool. The Program

uses a science-based approach to identify conservation and enhancement opportunities that, if implemented, will help California's declining and vulnerable species by protecting, creating, restoring, and reconnecting habitat and may contribute to species recovery and adaptation to climate change and resiliency.

https://www.wildlife.ca.gov/conservation/planning/regional-conservation

CDFW Natural Communities Conservation Plans

A Natural Communities Conservation Plan identifies and provides for the regional protection of plants, animals, and their habitats, while allowing compatible and appropriate economic activity.

https://www.wildlife.ca.gov/conservation/planning/nccp

California Sustainable Freight Action Plan

In July 2015, Governor Edmund G. Brown Jr. issued Executive Order B-32-15, which provides a vision for California's transition to a more efficient transport system. This transition of California's freight transport system is essential to supporting the State's economic development in coming decades while reducing harmful pollution affecting many California communities. As a key first step, the Governor's Executive Order directs the California State Transportation Agency, California Environmental Protection Agency, Natural Resources Agency, California Air Resources Board, California Department of Transportation, California Energy Commission, and Governor's Office of Business and Economic Development to develop a California Sustainable Freight Action Plan (Action Plan), by July 2016. This Action Plan is an unprecedented effort, intended to integrate investments, policies, and programs across several State agencies to help realize a singular vision for California's freight transport system. The Action Plan provides a recommendation on a high-level vision and broad direction to the Governor to consider for State agencies to utilize when developing specific investments, policies, and programs related to the freight transport system that serves our state transportation, environmental, and economic interests. Competitive grant applications will highlight how their planning effort will support this Action Plan.

https://dot.ca.gov/programs/transportation-planning/division-of-transportation-planning/strategic-freight-planning

APPENDIX B. SAMPLE APPLICATION PACKAGE

The Grant Application Guide and all fillable application documents can be found on the Sustainable Transportation Planning Grant website.

- Application Checklist, Cover Sheet, and Signature Page
- Application Narratives for Sustainable Communities, Climate Adaptation Planning, and Strategic Partnerships
- Scope of Work and Checklist
- Cost and Schedule and Checklist
- Third-Party In-Kind Valuation Plan and Checklist
- Local Resolution and Checklist

Application Checklist

The following documents are required and must be submitted via Smartsheet in one single PDF document, not to exceed 25 MB. The Signature Page may be submitted separately if there are issues combining with the single PDF document. Keep the file name brief, as files are corrupted when file names are too long. Refer to the Grant Application Guide for additional information and/or samples. Failure to include any of the required documents will result in a reduced application score.

PDF documents should be submitted in their fillable PDF formats. The original file formats will be required upon grant award.

Required Application Documents	
(✓)	**Ensure these items are completed prior to submitting to Caltrans via Smartsheet**
	Application Cover Sheet (complete in Smartsheet and submit with single PDF document)
	Signature Page (Electronic signatures accepted; may submit as a separate file if there are issues with combining with single PDF document)
	Application Narrative
	Scope of Work
	Cost and Schedule
	Third Party In-Kind Valuation Plan (if applicable, required upon award)
	Map of Project Area
Supplemental Documentation (not required)	
	Graphics of Project Area (when applicable)
	Letter(s) of support
	Data

Sustainable Transportation Planning Grant Program
GRANT APPLICATION COVER SHEET

PART A. APPLICATION INFORMATION

FY 2024-25

Grant Category (select only one)

Climate Adaptation (MPOs, RTPAs, Transit Agencies, Cities, Counties, Tribes, other Public Transportation Planning Entities)	
☐	11.47% Local Match requirement (Not Applicable to Native American Tribal Governments)

Sustainable Communities (MPOs with sub-applicant, RTPAs, Transit Agencies, Cities, Counties, Tribes, other Public Transportation Planning Entities)		**Strategic Partnerships** (MPOs and RTPAs only)	
☐	Sustainable Communities Competitive (11.47% Local Match requirement)	☐	Strategic Partnerships (FHWA SPR Part I) (20% Local Match requirement)
☐	Sustainable Communities Competitive Technical (11.47% Local Match requirement)	☐	Strategic Partnerships Transit (FTA 5304) (11.47% Local Match requirement)

Application Submittal Type (more than one may be selected)

New		**Prior Phases**		**Re-Submittal**	
☐	New Application	☐	Continuation of a prior project. If so, list the Grant FY and project title below.	☐	Re-submittal from a prior grant cycle.
				☐	How many times has an application been submitted for this project, including this one?

PART B. PROJECT INFORMATION

Project Title and Location			
Project Title			
Project Location (City)		Project Location (County)	

Funding Information

1. Is the applicant proposing to meet the minimum local match requirement or an over-match? Use the Match Calculator to determine the appropriate match. Match Calculator

   ☐ Minimum Local Match ☐ Over-Match

2. What is the source of Local Match funds being used?
   (MPOs – Federal Toll Credits, PL, and FTA 5303 cannot be used to match Sustainable Communities Competitive or Adaptation Planning grants)

   ☐ Local Transportation Funds ☐ Local Sales Tax ☐ Special Bond Measures

   ☐ Other, specify:

Grant Funds Requested	Local Match (Cash)	Local Match (In-Kind)	Total Local Match	% Local Match	Total Project Cost
$	$	$	$		$

1

Sustainable Transportation Planning Grant Program
GRANT APPLICATION COVER SHEET

PART B. PROJECT INFORMATION (CONTINUED)

Project Description (3-5 Sentences Max.)	
Insert Application Narrative: 1. Project Description	

Project Type

Choose the Project Type that best represents the focus of the proposed project. See Grant Application Guide for examples. Two max. may be selected.

- ☐ Active Transportation (Bicycle and Pedestrian)
- ☐ Climate Change (Infrastructure Adaptation, Vulnerability and Resiliency)
- ☐ Complete Streets (Multimodal specific type)
- ☐ Corridor (Local Streets or Highways)
- ☐ Freight/Goods Movement
- ☐ General Plan-Related (Circulation Element, Land Use Element, Specific Plan)
- ☐ Multimodal (Motorized and Active Transportation)
- ☐ Safety (Vision Zero, Safe Routes to Schools)
- ☐ Technical (Modeling, VMT Mitigation, ZEV Infrastructure, ZEB Transition, etc.)
- ☐ Transit (Bus, Light Rail, and Commuter Rail Service)
- ☐ Other, specify:

Underserved Community Definitions

If applicable to the project, what tools were used to identify the underserved communities in the project area? Choose all that apply.

- ☐ Rural Communities of 50,000 or less and outside of urbanized areas
- ☐ Native American Tribal Governments
- ☐ Regionally/Locally Defined Underserved Communities
- ☐ At/Below 80% Assembly Bill 1550 (Gomez, Statutes of 2016)
- ☐ At/Above 75% California Department of Education, Free or Reduced Priced Meals Data
- ☐ At/Above 75% CalEnviroScreen Version 4.0
- ☐ At/Below 25% California Healthy Places Index

Sustainable Transportation Planning Grant Program
GRANT APPLICATION COVER SHEET

PART C. CONTACT INFORMATON*

	Primary Applicant	Sub-Applicant	Sub-Applicant
Organization (Legal name)			
Dept./Division			
Street Address			
City			
Zip Code			
Phone Number			
Executive Director Name			
Title			
Executive Director E-mail			
Financial Manager Name			
Title			
Financial Manager E-mail			
Contact Person Name			
Title			
Contact Phone Number			
Contact E-mail			

*Use additional pages if necessary.

Sustainable Transportation Planning Grant Program
GRANT APPLICATION COVER SHEET

PART D. COMPLIANT HOUSING ELEMENT

City/County Primary/Sub-Applicants for Sustainable Communities Grants	Yes	No
Does the City/County have a compliant Housing Element? If No, explain the current status:		
Has the City/County submitted Annual Progress Report to the California Department of Housing and Community Development for calendar years 2021 and 2022?		

PART E. OTHER FUNDING PROGRAMS

Applicants may leverage other program funds for this planning grant, as long as the activities are eligible.

	Yes	No	N/A
Is the applicant applying for the Governor's Office of Planning and Research (OPR) Climate Adaptation Planning Grant Program? Applicants should not submit the same project application to both funding programs. However, applicants may propose to leverage funds from one funding program to another. For instance, an applicant with a large project may propose to fund one component with Caltrans funds, and another with OPR funds. Applicants may also propose two entirely different projects to each funding program. If yes, identify the differences between each proposal, and briefly summarize the leverage opportunity if awarded both Caltrans and OPR funding:			
Is the applicant applying for any other funding programs to complete this project? If yes, list them here:			

Sustainable Transportation Planning Grant Program
GRANT APPLICATION COVER SHEET

PART F. LEGISLATIVE INFORMATION

Use the following link to determine the appropriate legislative members in the Project area.

Search by address: http://findyourrep.legislature.ca.gov/

State Senator(s)		Assembly Member(s)	
District	Name	District	Name

PART G. LETTERS OF SUPPORT

List all letters of support received for the proposed project. Letters should be addressed to the applicant.

Name/Agency	Name/Agency

Sustainable Transportation Planning Grant Program
GRANT APPLICATION SIGNATURE PAGE

If selected for funding, the information contained in this application will become the foundation of the contract with Caltrans.

To the best of my knowledge, all information contained in this application is true and correct. If awarded a grant with Caltrans, I agree that I will adhere to the program guidelines.

Applicant			
Authorized Official (Applicant)			
Print Full Name			
Title			
Signature		Date	
Sub-Applicant(s)*			
Authorized Official (Sub-Applicant)			
Print Full Name			
Title			
Signature		Date	
Authorized Official (Sub-Applicant)			
Print Full Name			
Title			
Signature		Date	
Authorized Official (Sub-Applicant)			
Print Full Name			
Title			
Signature		Date	

*Use additional pages if necessary.

Sustainable Transportation Planning Grant Program
SUSTAINABLE COMMUNITIES - GRANT APPLICATION NARRATIVE

PART H. APPLICATION NARRATIVE	FY 2024-25

Project Information	
Organization (Legal name)	
Project Title	
Project Area Boundaries	
Project Timeframe (Start and End Dates)	

Do not alter application format and font size 10

Application Narrative

1. **Project Description (10 points)**
   Briefly summarize project in a clear and concise manner, including why the project is necessary, major deliverables, parties involved, and any connections to relevant local, regional, and/or State planning efforts. **3-5 sentences maximum; Do not exceed the space provided.**

2A. Project Justification (15 points)

- Describe the problems or deficiencies the project is attempting to address, as well as how the project will address the identified problems or deficiencies
- Describe the ramifications and impact of not funding this project
- Clearly define the existing issues surrounding the project (e.g., transportation issues, inadequate transit services, impacts of heavy trucking on local streets, air pollution, etc.)
- Competitive applications support the need for the project with empirical data
- Describe how this project addresses issues raised
- Define the public benefit
- Explain how the public was involved with identifying issues
- **Do not exceed the space provided**

Sustainable Transportation Planning Grant Program
SUSTAINABLE COMMUNITIES - GRANT APPLICATION NARRATIVE

2B. Underserved Communities Justification (5 points)

The tools in Grant Application Guide, Appendix A, are intended to help applicants define an underserved community.

- Explain how the project area or portions of the project area are defined as an underserved community, including Native American Tribal Governments and rural communities
- Explain how the proposed project addresses the needs of the underserved community
- Describe how underserved communities will benefit from the proposed planning project
- Cite data sources, the tools used, and include a comparison to the statewide thresholds that are established in each tool
- **Do not exceed the space provided**

2C. Underserved Communities Engagement (5 points)

See Grant Application Guide, Appendix A, for best practices in community engagement

- Describe how the proposed effort would engage underserved communities, including Native American Tribal Governments and rural communities. Include specific outreach methods for involving underserved communities
- Describe how underserved communities will continue to be engaged during the next phases after the proposed planning project is complete, including project implementation.
- **Do not exceed the space provided**

3. Grant Specific Objectives (Total 35 points)

Integrate the following Grant Program Considerations (Grant Application Guide, Chapter 1.2) in the responses for 3A-G below, as applicable:

- Caltrans Strategic Plan
- California Transportation Plan (CTP)
- Modal Plans that Support the CTP
- Title VI and Environmental Justice
- Climate Action Plan for Transportation Infrastructure
- California Adaptation Strategy
- Master Plan for Aging

Sustainable Transportation Planning Grant Program
SUSTAINABLE COMMUNITIES - GRANT APPLICATION NARRATIVE

3A. Grant Specific Objectives (5 points)

- Explain how the proposal encourages local and regional multimodal transportation, housing and land use planning that furthers the region's RTP SCS (where applicable)
- Demonstrate how the proposed effort would coordinate transportation, housing, and land use planning components of the project to inform one another (i.e., regular coordination meetings between responsible entities, joint community meetings, letters of commitment from all relevant implementing agencies, etc.
- Explain how the proposed effort would contribute to shifts in land use towards more sustainable and equitable communities, such as more affordable housing near transit or more compact regional development patterns (Reference Grant Application Guide, Chapter 2.2, for example project types)
- **Do not exceed the space provided**

3B. Grant Specific Objectives (5 points)

- Explain how the proposal contributes to the State's GHG reduction targets and advances transportation related GHG emission reduction project types/strategies (i.e., mode shift, demand management, travel cost, operational efficiency, accessibility, and coordinationwith future employment and residential land use, etc.)
- **Do not exceed the space provided**

3C. Grant Specific Objectives (5 points)

- Explain how the proposal supports other State goals, including but not limited to:
  - State Planning Priorities (Government Code Section 65041.1)
  - Climate Adaptation Goals (State Adaptation Strategy)
  - Goals and Best Practices cited in the 2017 RTP Guidelines, Appendices K and L.
- **Do not exceed the space provided**

3D. Grant Specific Objectives (5 points)

- Explain how the proposal encourages stakeholder involvement
  - List the stakeholders involved in the planning effort (e.g., first responders, community-based organizations, local housing and public health departments, transit agencies, and partners including State, federal, local agencies)
  - Explain how stakeholders will be involved throughout the project
- **Do not exceed the space provided**

Sustainable Transportation Planning Grant Program
SUSTAINABLE COMMUNITIES - GRANT APPLICATION NARRATIVE

3E. Grant Specific Objectives (5 points) • Explain how the proposal involves active community engagement • Describe the specific public outreach methods/events that will be employed throughout the project • Explain how public input will inform the project • Describe how the effort will survey the public at the end of each outreach event to gauge effectiveness of these activities for the planning effort • **Do not exceed the space provided**
3F. Grant Specific Objectives (5 points) • Explain how the proposal assists in achieving the Caltrans Mission and Grant Program Objectives (Grant Application Guide, Chapter 1.2)   ○ Sustainability, Preservation, Accessibility, Safety, Innovation, Economy, Health, and Social Equity, as applicable • **Do not exceed the space provided**
3G. Grant Specific Objectives (5 points) • Explain how the proposal ultimately results in funded and programmed multimodal transportation system improvements. Applicants should discuss next steps for project implementation, including timing for programming improvements that would result from the planning effort • **Do not exceed the space provided**
4. Project Management (Total 30 points) See Scope of Work and Cost and Schedule samples and checklists for requirements (Grant Application Guide, Appendix B), also available on the Caltrans grants website: https://dot.ca.gov/programs/transportation-planning/regional-planning/sustainable-transportation-planning-grants
4A. Scope of Work (15 points)
4B. Cost and Schedule (15 points)

Sustainable Transportation Planning Grant Program
CLIMATE ADAPTATION PLANNING - GRANT APPLICATION NARRATIVE

PART G. APPLICATION NARRATIVE | **FY 2024-25**

Project Information	
Organization (legal name)	
Project Title	
Project Area Boundaries	
Project Timeframe (Start and End Dates):	

Application Narrative

1. Project Description (5 points)
Briefly summarize project in a clear and concise manner, including why the project is necessary, major deliverables, desired outcomes, parties involved, and alignment with relevant local, regional, and/or State planning efforts. **3-5 sentences maximum; Do not exceed the space provided.**

2A. Project Justification (10 points)

- Describe the problem or deficiencies the project is attempting to address, including the climate adaptation need and any other priority needs, as well as how the project will address the identified problems or deficiencies
- Describe the impact of not funding the project
- Describe the public benefits
- **Do not exceed the space provided**

2B. Underserved Communities Justification (5 points)

The tools in the Grant Application Guide, Appendix A, are intended to help applicants define an underserved community.

- Explain how the project area or portions of the project area benefit underserved communities, including Tribal, local, regional, and rural communities as applicable
- Explain how the proposed project addresses the needs of the communities and how they will benefit from the proposed project, including if the communities informed the scope of the project
- Cite data sources, the tools used, and include a comparison to the statewide thresholds that are established in each tool
- **Do not exceed the space provided**

Sustainable Transportation Planning Grant Program
CLIMATE ADAPTATION PLANNING - GRANT APPLICATION NARRATIVE

2C. Underserved Communities Engagement (5 points)

See Grant Application Guide, Appendix A. for best practices in community engagement

- Describe how the proposed project will engage underserved communities and how the effort was informed by engagement with underserved communities, including Tribal, local, regional, and rural communities as applicable
    - Include specific outreach methods for involving underserved communities
- Describe how underserved communities will continue to be engages during the next phases after the proposed planning project is complete, including implementation
- **Do not exceed the space provided**

3. Grant Specific Objectives (Total 40 points)

Integrate the following Grant Program Considerations (Grant Application Guide, Chapter 1.2) in the responses for 3A-D below, as applicable:

- Caltrans Strategic Plan
- California Transportation Plan (CTP)
- Modal Plans that Support the CTP
- Title VI and Environmental Justice
- Climate Action Plan for Transportation Infrastructure
- California Adaptation Strategy
- Master Plan for Aging

3A. Grant Specific Objectives; climate risk and adaptation (15 points)

- Explain how the project identifies and assesses climate change impact risks to multimodal transportation infrastructure vulnerabilities to climate change impacts in the project area
- Explain how the project will identify adaptation strategies and specific actions to remedy identified climate related vulnerabilities. Projects and plans should describe short-, medium-, and long-term strategies that will address the overall risk for the entire service life of the asset or capital project using the best available science and guidance.
- Articulate how the project will advance the planning of specific climate adaptation projects, such as developing a cost estimate, pursuing a technical feasibility study for adaptation options, or developing a conceptual design (up to 30%)
- When applicable, explain how the project includes economic analysis and/or cost-benefit analysis of identified adaptation strategy or strategies
- **Do not exceed the space provided**

Sustainable Transportation Planning Grant Program
CLIMATE ADAPTATION PLANNING - GRANT APPLICATION NARRATIVE

3B. Grant Specific Objectives; co-benefits (10 points)

- Identify co-benefits of the adaptation work, such as benefits to public health, natural ecosystems, air quality, social equity, the economy, or reductions in greenhouse gas (GHG) emissions.
    - If reductions in GHG emissions are identified as a co-benefit, explain how the project advances transportation related GHG emission reductions specifically through different project types/strategies (e.g., mode shift, demand management, accessibility, etc.)
- Describe if and how nature-based solutions will be integrated into the proposed project
- Describe how adaptation needs of environmental resources in proximity to the transportation system such as coastal resources like tidal marsh or beaches, wildlife connectivity, wetlands, or fish passage needs are considered in the proposed project (if applicable)
- **Do not exceed the space provided**

3C. Grant Specific Objectives; partnerships and stakeholder process (10 points)

- Explain how the project demonstrates on-going collaboration and partnerships between sectors and jurisdictions, and across levels of government at a regional scale
- Explain if the project also includes collaboration and partnerships with diverse external stakeholders such as businesses, non-governmental agencies, federal, state, or local agencies, community-based organizations, and community residents
- Explain how the project includes a multistakeholder process that provides an opportunity for meaningful community engagement from communities potentially impacted by any project identified or developed as part of the planning grant

Do not exceed the space provided

3D. Grant Specific Objectives; alignment with other plans and State Goals (10 points)

- Explain how the project is consistent with priorities, goals, and actions of the California State Adaptation Strategy, follows State guidance on adaptation planning, and is consistent with any applicable local/regional resilience planning.
- Articulate if the project will identify ways to incorporate transportation-related climate adaptation needs into existing transportation plans, specifically how the project will lead to the identification and development of capital projects that can be programmed as part of local or regional plans
- Explain how the project is in alignment with or augments existing plans, including climate action/adaptation plans, hazard mitigation plans, safety elements of general plans, resilience improvement plans, and/or Coastal Act/Certified Local Coastal Program plans
- Explain how the proposed project addresses public access and Complete Streets needs
- **Do not exceed the space provided**

4. Project Management (Total 30 points)

See Scope of Work and Cost and Schedule samples and checklists for requirements (Grant Application Guide, Appendix B), also available on the Caltrans grants website: https://dot.ca.gov/programs/transportation-planning/regional-planning/sustainable-transportation-planning-grants

Sustainable Transportation Planning Grant Program
CLIMATE ADAPTATION PLANNING - GRANT APPLICATION NARRATIVE

4A. Scope of Work **(15 points)**
4B. Cost and Schedule **(15 points)**

Sustainable Transportation Planning Grant Program
STRATEGIC PARTNERSHIPS - GRANT APPLICATION NARRATIVE

PART H. APPLICATION NARRATIVE

FY 2024-25

Project Information	
Organization (Legal name)	
Project Title	
Project Area Boundaries	
Project Timeframe (Start and End Dates)	

Do not alter application format and font size 10

Application Narrative

1. **Project Description (10 points)**
   Briefly summarize the project in a clear and concise manner, including why the project is necessary, major deliverables, parties involved, and any connections to relevant local, regional, and/or State planning efforts. **3-5 sentences maximum; Do not exceed the space provided.**

2. **Project Justification (30 points)**
   - Describe the problems or deficiencies the project is attempting to address, as well as how the project will address the identified problems or deficiencies
   - Describe the ramifications and impact of not funding this project
   - Clearly define the existing issues surrounding the project (e.g., transportation issues, in-adequate transit services, impacts of heavy trucking on local streets, air pollution, etc.)
   - Competitive applications support the need for the project with empirical data
   - Describe how this project addresses issues raised
   - **Do not exceed the space provided**

Sustainable Transportation Planning Grant Program
STRATEGIC PARTNERSHIPS - GRANT APPLICATION NARRATIVE

3. Grant Specific Objectives (Total 20 points)
Integrate the following Grant Program Considerations (Grant Application Guide, Chapter 1.2) in the responses for 3A-3D below, as applicable:

- Caltrans Strategic Plan
- California Transportation Plan (CTP) 2050
- Modal Plans that Support the CTP 2050
- Title VI and Environmental Justice
- Climate Action Plan for Transportation Infrastructure
- California Adaptation Strategy
- Master Plan for Aging

3A. Grant Specific Objectives (5 points)

- List and explain how the proposal would accomplish the Federal Planning Factors (Grant Application Guide, Chapter 5.2), achieve the Caltrans Mission and the Grant Program Objectives (Grant Application Guide, Chapter 1.2.)
- **Do not exceed the space provided**

3B. Grant Specific Objectives (5 points)

- Explain how the proposal partners with Caltrans to identify and address statewide, interregional, or regional transportation deficiencies in the State Highway System (or multimodal transportation system for transit-focused projects)
- Clearly define how Caltrans will be a partner in the proposed project, as appropriate for the project
- **Do not exceed the space provided**

3C. Grant Specific Objectives (5 points)

- Explain how the proposal strengthens government-to-government relationships
- Outline the entities involved with the proposed project and how partnerships will be strengthened as a result
- **Do not exceed the space provided**

3D. Grant Specific Objectives (5 points)

- Explain how the proposal results in programmed system improvements
- Discuss next steps for project implementation, including timing for programming improvements that would result from the planning effort
- **Do not exceed the space provided**

Sustainable Transportation Planning Grant Program
STRATEGIC PARTNERSHIPS - GRANT APPLICATION NARRATIVE

4. Project Management (Total 40 points) See Scope of Work and Cost and Schedule samples and checklists for requirements (Grant Application Guide, Appendix B), also available on the Caltrans grants website, https://dot.ca.gov/programs/transportation-planning/division-of-transportation-planning/regional-and-community-planning/sustainable-transportation-planning-grants
4A. Scope of Work (20 points)
4B. Cost and Schedule (20 points)

Scope of Work Checklist

The Scope of Work (SOW) is the official description of the work that is to be completed during the contract. Tasks 1-6 outlined in the SOW are for illustrative purposes only. **Applications with missing components will be at a competitive disadvantage.** Please use this checklist to make sure your Scope of Work is complete.

Scope of Work Checklist	
(✓)	**Ensure these items are completed prior to submitting to Caltrans**
	Use the Fiscal Year 2024-25 template provided
	Include the activities discussed in the grant application
	List all tasks using the same title as stated in the Project Cost and Schedule
	Include task numbers in accurate and proper sequencing, consistent with the Cost and Schedule
	Exclude sub-task numbers; only include sub-headings
	Exclude tasks for project management and/or staff/consultant coordination; these activities should be spread among relevant tasks
	Include a thorough Introduction to describe relevant background, related planning efforts, the project and project area demographics, including a description of the underserved community involved with the project, if applicable
	Include a thorough and accurate narrative description of each task
	Task 01 is a required task. It must be titled "Project Administration", it cannot exceed 5% of the grant award amount, and only the grantee and sub-recipient(s) can charge against this Task. This Task must only include the following activities and deliverables: • Caltrans and grantee Project kick-off meeting at the start of the grant • Invoicing and quarterly reporting to Caltrans • DBE Reporting (federal grants only)
	Include Task 02 for the procurement of a consultant (if needed). This task is for the grantee and sub-recipient(s) only.
	Include detailed public participation and services to diverse communities in the Public Outreach Task (excluding technical projects)
	Identify public outreach strategies in a manner that provides flexibility and allows for a diverse range of outreach methods (both in-person and on-line), excluding technical projects
	Include a Task(s) for a Draft and Final product. The draft plan must include an opportunity for the public to provide feedback (excluding technical projects).
	Include a summary of next steps your agency will take towards implementing the project in the Final Product
	List achievable project deliverables for each Task
	EXCLUDE environmental, complex design, engineering work, and other ineligible activities outlined in the Grant Application Guide

SCOPE OF WORK

Project Information	
Grant Category	
Grant Fiscal Year	
Project Title	
Organization (Legal name)	

Disclaimer

Agency commits to the Scope of Work below. Any changes will need to be approved by Caltrans prior to initiating any Scope of Work change or amendment.

Introduction

[Provide a detailed summary of the grant project. Include a thorough Introduction to describe relevant background, related planning efforts, the project and project area demographics, including a description of the underserved community involved with the project, if applicable]

Project Stakeholders

[Provide a detailed summary of who the Project Stakeholders are. Will a consultant be working on the project? If so, what activities/tasks will they be involved with?]

Overall Project Objectives

[Provide a detailed summary of the Overall Project Objectives]

Summary of Project Tasks

[Project Management activities must be identified within the task they are occur and not as standalone tasks.]

Task 01: Project Administration

This is an Administrative Task that shall only be charged against by the Grantee for the Administration of this grant project. Costs for this task cannot exceed 5% of the grant award amount.

Grantee will manage and administer the grant project according to the Grant Application Guidelines, Regional Planning Handbook, and the executed grant contract between Caltrans and the grantee.

[Provide a detailed narrative of activities to be completed in this Task]

Task Deliverables
[The following are the only allowable deliverables for this Task. This Task is not for the management of the consultant or meetings between the grantee and the consultant]

Kick-off meeting with Caltrans - Meeting Notes, quarterly invoices and progress reports, DBE reporting (federal Grants only).

Task 02: Consultant Procurement

[Provide a detailed narrative of activities to be completed in this Task]

Grantee will procure a consultant, consistent with state and federal requirements, Local Assistance Procedures Manual for procuring non-Architectural and Engineering consultants, the Grant Application Guide, Regional Planning Handbook, and the executed grant contract between Caltrans and the grantee.

Task Deliverables
[List achievable deliverables for this Task]
Examples: Grantees current procurement procedures, copy of the Request for Proposal/Qualifications, copy of the contract between consultant and grantee, copies of all amendments to the consultant contract, meeting notes from project kick-off with consultant

Task 1: Existing Conditions

[Provide a detailed narrative of activities to be completed in this Task]

Task Deliverables
[List achievable deliverables for this Task]
Examples: Summary of Existing Conditions

Task 3: Analysis

[Provide a detailed narrative of activities to be completed in this Task]

Task Deliverables
[List achievable deliverables for this Task]
Examples: Summary of Analysis

Task 4: Public Outreach

[Provide a detailed narrative of activities to be completed in this Task]

Task Deliverables
[List achievable deliverables for this Task]

Examples: PowerPoint Presentations, flyers, website announcements, sign-in sheets, community surveys, conceptual drawings, bilingual services, receipts for light snacks (Caltrans approval required prior to purchase. No full meals)

Task 5: Advisory Committee Meetings

[Provide a detailed narrative of activities to be completed in this Task]

Task Deliverables
[List achievable deliverables for this Task]
Examples: Agendas, meeting notes, list of attendees, list of action items

Task 6: Draft and Final Plan

[Provide a detailed narrative of activities to be completed in this Task]

Task Deliverables
[List achievable deliverables for this Task]
Examples: Draft Plan, Public Review – list of comments, Final Plan that includes a summary of next steps towards implementation, credits FHWA, FTA, and/or Caltrans on the cover or title page, submitted to Caltrans in an ADA accessible electronic copy.

Task 7: Board Review/Approval

[Provide a detailed narrative of activities to be completed in this Task]

Task Deliverables
[List achievable deliverables for this Task]
Examples: Board Agenda, presentation materials, meeting minutes with board acceptance/approval.

Cost and Schedule Checklist

The Cost and Schedule is the official budget and timeline for the project. Tasks 1-6 outlined in the Cost and Schedule are for illustrative purposes only. **The Cost and Schedule must be consistent with the Grant Application Cover Sheet. Applications with missing components will be at a competitive disadvantage.**

Cost and Schedule Checklist	
(✓)	**Ensure these items are completed prior to submitting to Caltrans**
	Use the Fiscal Year 2024-25 template provided (do not alter the template)
	List all tasks with the same title as stated in the Scope of Work
	Include task numbers in proper sequencing, consistent with the Scope of Work
	Exclude sub-task numbers and sub-headings
	Exclude tasks for project management and/or staff/consultant coordination; these activities should be spread among relevant tasks
	Task 01 is a required task. It must be titled "Project Administration", it cannot exceed 5% of the grant amount requested, and only the grantee and recipient(s) can charge against this Task. This Task must only include the following activities and deliverables: • Project kick-off meeting between the grantee and Caltrans at the start of the grant • Invoicing and quarterly reporting to Caltrans • DBE Reporting (federal grants only)
	Include Task 02 for procurement of consultants, if consultants are needed. This task is for the grantee and sub-recipient(s) only.
	Complete all budget columns as appropriate: Total Cost, Grant Amount, Local Cash Match, and if applicable, Local In-Kind Match
	Ensure the correct minimum local match amount, calculated as a percentage of the total project cost (grant plus local match), is provided
	Use the Local Match Calculator to ensure the total Local Match amount meets the minimum required Local Match for the specified Grant Category
	Include a grant amount for each Task (excluding Tasks 01 and 02)
	Identify if a Tapered Local Match approach will be used, which allows grantees to vary the required local match ratio over the life of the grant contract. Grantee agrees to satisfy the total local match amount by the contract expiration date.
	Identify the estimated indirect cost rate if indirect costs will be reimbursed. If FY 2023-24 indirect cost rates are not available, the rate will be an estimate based on the currently approved rate.
	Include a best estimate of the amount of time needed to complete each task
	State a realistic total cost for each task based on the work that will be completed
	Use only whole dollars in the financial information fields. No rounding up or down and no cents.
	Start the timeframe at the beginning of the grant period (November 2024)
	Extend the timeframe to the end of the grant period (June 2027)

California Department of Transportation

Sustainable Transportation Planning Grant Program

COST AND SCHEDULE

Grant Category	
Grant Fiscal Year	FY 2024-25
Project Title	
Organization (Legal name)	
Disclaimers	Agency commits to the Cost and Schedule below. Any changes will need to be approved by Caltrans prior to initiating any Cost and Schedule change or amendment. Use only whole dollars in the financial information fields. No rounding up or down and no cents. Use the Local Match Calculator to ensure that grant and local match amounts are correct: Local Match Calculator
Reimbursements/ Invoicing	Does your agency plan to request reimburesement for indirect costs? ☐ Yes ☐ No If yes, what is the estimated indirect cost rate? _____ Does your agency plan to use the Tapered Match approach for invoicing purposes? ☐ Yes ☐ No

Task #	Task Title	Grant Amount*	Estimated Local Cash Match*	Estimated Local In-Kind Match*	Estimated Total Project Cost*	FY 2024/25												FY 2025/26												FY 2026/27											
						J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
01	Project Administration (no more than 5% of total grant funds)	$0	$2,500	$0	$2,500																																				
02	Consultant Procurement	$4,427	$574	$0	$5,000																																				
1	Existing Conditions	$11,509	$1,491	$0	$13,000																																				
2	Analysis	$30,986	$4,015	$0	$32,500																																				
3	Public Outreach	$39,839	$5,162	$0	$45,000																																				
4	Advisory Committee Meetings	$13,280	$1,721	$0	$15,000																																				
5	Draft and Final Plan	$72,595	$6,577	$0	$82,000																																				
6	Board Review/Approval	$4,424	$900	$0	$5,000																																				
	Totals	**$177,060**	**$22,940**	**$0**	**$200,000**																																				

Third Party In-Kind Valuation Plan Checklist

The Third Party In-Kind Valuation Plan is an itemized breakdown by task and serves as documentation for the goods and/or services to be donated. The Third Party In-Kind Valuation Plan must be consistent with the information provided on the Cost and Schedule and Grant Application Cover Sheet. This document is required upon grant award as a condition of grant acceptance. Refer to Grant Application Guide, Chapter 6.5 for a Third-Party In-Kind description and examples.

Third-Party In-Kind Valuation Plan Checklist	
(✓)	**Ensure these items are completed prior to submitting to Caltrans**
	Use the Fiscal Year 2024-25 template provided (do not alter the template).
	Name the third party in-kind local match provider; this cannot be the Grantee
	Describe how the third party in-kind local match will be tracked and documented for accounting purposes.
	Describe the fair market value of third party in-kind contributions and how the values were determined.
	Include an itemized breakdown by task, consistent with the Cost and Schedule.
	Ensure the in-kind local match amount is consistent with the Grant Application Cover Sheet and Cost and Schedule.

California Department of Transportation

Sustainable Transportation Planning Grant Program

THIRD-PARTY IN-KIND VALUATION PLAN

Grant Category

Grant Fiscal Year

Project Title

Organization
(Legal name)

Task #	Task Title	Third-Party In-Kind Contribution	Name of Third-Party In-Kind Match Provider	Fair Market Value Determination	Fair Market Value or Hourly Rate	Number or Hours	Estimated Cost
					Total In-kind Match:		**$0**

Explain how the third party in-kind match will be documented for accounting purposes:	

Local Resolution Checklist

A Local Resolution is NOT required at the grant application stage; however, it is required upon award as a condition of grant acceptance.

Local Resolution Checklist	
(✓)	Ensure these items are completed prior to submitting to Caltrans
	State the title of the project (1)
	State the job title of the person authorized to enter into a contract with Caltrans on behalf of the applicant (2)
	NOT be more than a year old, or it will not be accepted (3)
	Signed by the grant applicant's governing board (4)

Sample Local Resolution

CITY OF CAN DO RESOLUTION
NO. 009-2012

RESOLUTION OF THE BOARD OF DIRECTORS OF THE CITY OF CAN DO AUTHORIZING THE EXECUTIVE DIRECTOR TO EXECUTE AGREEMENTS WITH THE

1

CALIFORNIA DEPARTMENT OF TRANSPORTATION FOR THE CITY OF CAN DO COMPLETE STREET PLAN

WHEREAS, the Board of Directors of the City of Can Do is eligible to receive Federal and/or State funding for certain transportation planning related plans, through the California Department of Transportation;

WHEREAS, a Restricted Grant Agreement is needed to be executed with the California Department of Transportation before such funds can be reimbursed through the Transportation Planning Grant Program;

WHEREAS, the City of Can Do wishes to delegate authorization to execute these agreements and any amendments thereto;

2

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors of the City of Can Do, authorize the Executive Director, or designee, to execute all Restricted Grant Agreements and any amendments thereto with the California Department of Transportation.

APPROVED AND PASSED this 4th day of December 2023.

3

4

John Doe,
Chair

ATTEST:

Eileen Wright, Executive Director

APPENDIX C. CALTRANS/REGIONAL AGENCY BOUNDARIES MAP

APPENDIX D. CALTRANS DISTRICT CONTACT LIST

Caltrans Sustainable Transportation Planning Grants District Lead Contact and Native American Liaison Contact List

DISTRICT	LEAD CONTACT(S)	NATIVE AMERCAN LIAISON CONTACT(S)	MPO/RTPA
DISTRICT 1 1656 Union Street P.O. Box 3700 Eureka, CA 95502	Tatiana Ahlstrand (707) 684-6884 Email: Tatiana.Ahlstrand@dot.ca.gov	Kathleen Sartorius (707) 601-7978 Email: Kathleen.Sartorius@dot.ca.gov	Del Norte LTC Humboldt CAOG Lake CCAPC Mendocino COG
DISTRICT 2 1657 Riverside Drive Redding, CA 96001	Kathy Grah Office:(530) 229-0517 Cell: (530) 782-3152 Email: Kathy.Grah@dot.ca.gov	Kendee Vance (530) 225-3574 Email: Kendee.Vance@dot.ca.gov	• Lassen CTC • Tehama CTC • Modoc LTC • Trinity CTC • Plumas CTC • Siskiyou CLTC • Shasta RTA
DISTRICT 3 703 B Street Marysville, CA 95901	**El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba Counties** Sukhi Johal (530) 565-3885 Email: Sukhi.Johal@dot.ca.gov **Butte, Colusa, Lake Tahoe Basin, Glenn, Nevada, and Sierra Counties** Kevin Yount (530) 513-0584 Email: Kevin.Yount@dot.ca.gov	Angelina Healy (530) 720-9449 Email: Angelina.Healy@dot.ca.gov	• Butte CAG • Sierra LTC • Colusa CTC • Glenn CTC • El Dorado CTC • Nevada CTC • Placer CTPA • Sacramento Area COG • Tahoe MPO
DISTRICT 4 111 Grand Avenue P.O. Box 23660 Oakland, CA 94623-0660	Becky Frank (510) 960-0883 Email: Becky.Frank@dot.ca.gov Stephen Conteh (510) 960-0887 Email: Stephen.Conteh@dot.ca.gov	Stephen Conteh (510) 960-0887 Email: Stephen.Conteh@dot.ca.gov	• Metropolitan Transportation Commission
DISTRICT 5 50 Higuera Street San Luis Obispo, CA 93401-5415	Jenna Schudson (805) 835-6432 Email: Jenna.Schudson@dot.ca.gov	John Olejnik (805) 748-1787 Email: John.Olejnik@dot.ca.gov	• Monterey TAMC • Santa Cruz CCRTC • San Benito COG • Assoc. of Monterey Co. Bay Area Govts • Santa Barbara CAG • San Luis Obispo COG
DISTRICT 6 1352 W. Olive Avenue P.O. Box 12616 Fresno, CA 93778-2616	Lorena Mendibles (559) 840-6066 Email:Lorena.Mendibles@dot.ca.gov Edgar Hernandez (559) 981-7436 Email:Edgar.Hernandez@dot.ca.gov	Lorena Mendibles (559) 840-6066 Email: Lorena.Mendibles@dot.ca.gov	• Fresno COG • Tulare CAG • Kern COG • Kings CAG • Madera CTC

Caltrans Sustainable Transportation Planning Grants District Lead Contact and Native American Liaison Contact List

DISTRICT	LEAD CONTACT(S)	NATIVE AMERCAN LIAISON CONTACT(S)	MPO/RTPA
DISTRICT 7 100 S. Main Street Los Angeles, CA 90012	James Santiago (213) 310-2804 Email: James.Santiago@dot.ca.gov	Not applicable	• Southern California Association of Governments
DISTRICT 8 464 W. 4th Street Mail Station 722 San Bernardino, CA 92401	Ricky Rivers (909) 806-3298 Email: Ricky.Rivers@dot.ca.gov Stephanie Gallegos (909) 383-4057 Email: Stephanie.Gallegos@dot.ca.gov	Lorna Foster (909) 501-5759 Email: Lorna.Foster@dot.ca.gov	• Southern California Association of Governments
DISTRICT 9 500 S. Main Street Bishop, CA 93514	Catherine Carr (707) 874-8318 Email: Catherine.Carr@dot.ca.gov	Emilee Mullen (707) 784-4260 Email: Emilee.Mullen@dot.ca.gov	• Inyo LTC • Mono LTC • Eastern Kern (COG)
DISTRICT 10 1976 E. Dr. Martin Luther King Boulevard P.O. Box 2048 Stockton, CA 95201	**Mountain Counties** Gregoria Ponce (209) 483-7234 Email: Gregoria.Ponce@dot.ca.gov **Merced, San Joaquin, Stanislaus Counties** Tom Dumas (209) 941-1921 Email: Tom.Dumas@dot.ca.gov	Paul Bauldry (209) 948-7647 Email: Paul.Bauldry@dot.ca.gov Gregoria Ponce (209) 483-7234 Email: Gregoria.Ponce@dot.ca.gov	• Alpine County LTC • Amador CTC • Calaveras COG • Mariposa LTC • Merced CAG • Tuolumne CTC • San Joaquin COG • Stanislaus COG
DISTRICT 11 4050 Taylor Street Mail Station 240 San Diego, CA 92110	Omar Flores (619) 985-2124 Email: Omar.Flores@dot.ca.gov	Rafael Reyes (619) 208-1104 Email: Rafael.Reyes@dot.ca.gov	• San Diego Association of Governments • Southern California Association of Governments
DISTRICT 12 1750 E. 4th Street Santa Ana, CA 92705	Eric Chau (657) 328-6268 Email: Eric.E.Chau@dot.ca.gov	Not applicable	• Southern California Association of Governments

California Department of Transportation
Division of Transportation Planning
1120 N Street
Sacramento, CA 95814
https://dot.ca.gov/programs/transportation-planning

Agenda Item No: 8.e.

MEETING DATE/TIME: 9/3/2025

ITEM NO: 2025-980

City of Ukiah

AGENDA SUMMARY REPORT

SUBJECT: Approve the Notice of Completion for the Thickening and Dewatering Improvements Project, Specification No. 23-02, and Direct the City Clerk to File the Notice of Completion with the County Recorder.

DEPARTMENT: Water Resources

PREPARED BY: Jason Benson, Senior Civil Engineer

PRESENTER: Sean White, Water Resources Director

ATTACHMENTS:

1. WWTP Thickening and Dewatering Improvements Plans & Specs
2. Spec 23-02 Thickening and Dewatering Improvements Project Change Orders
3. Notice-of-Completion

Summary: Council will consider approving the Notice of Completion for the Thickening and Dewatering Improvements Project and authorizing the release of the 5% retention to Pacific Infrastructure.

Background: On March 15, 2023, City Council approved the plans, specifications, and estimate for the Thickening and Dewatering Improvements Project and directed staff to advertise for bids. On June 7, 2023, the Council awarded the project construction contract to Pacific Infrastructure in the amount of $2,994,000 with a 10% contingency.

The project consisted of systemic improvements at the Wastewater Treatment Plant, including the installation of a new screw press and suspended air flotation (SAF) unit to replace failing equipment. These improvements increase efficiency, reduce maintenance needs, and improve biosolid quality for beneficial reuse.

Discussion: The project was completed in accordance with the approved plans and specifications (Attachment 1). The final construction cost, including approved change orders (Attachment 2), totaled $3,151,889.84 which was below the Council approved authorization amount for the project.

The contract work was substantially completed on August 29, 2025. Final payment of the retention will be made to Pacific Infrastructure after 35 days from the date the Notice of Completion (Attachment 3) is filed with the County Recorder.

Recommended Action: Approve the Notice of Completion for the Thickening and Dewatering Improvements Project, Specification No. 23-02, and direct the City Clerk to file the Notice of Completion with the County Recorder.

BUDGET AMENDMENT REQUIRED: No

CURRENT BUDGET AMOUNT: 84027225.80100.18130: $3,151,889.84

PROPOSED BUDGET AMOUNT: N/A

FINANCING SOURCE: Wastewater Funds

REVENUE: No GRANT: No

PREVIOUS CONTRACT/PURCHASE ORDER NO.: Contract No. 2223-214

COORDINATED WITH: N/A

STRATEGIC PLAN (SP): N/A

CLIMATE INITIATIVES (CI): N/A

GENERAL PLAN ELEMENTS (GP): N/A

Approved:
Sage Sangiacomo, City Manager

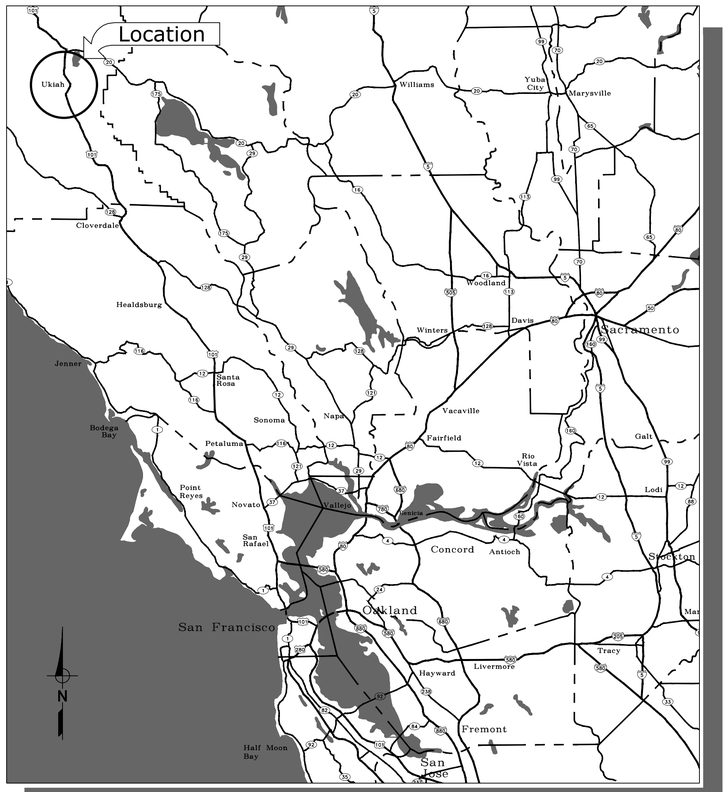
ATTACHMENT #1

CITY OF UKIAH

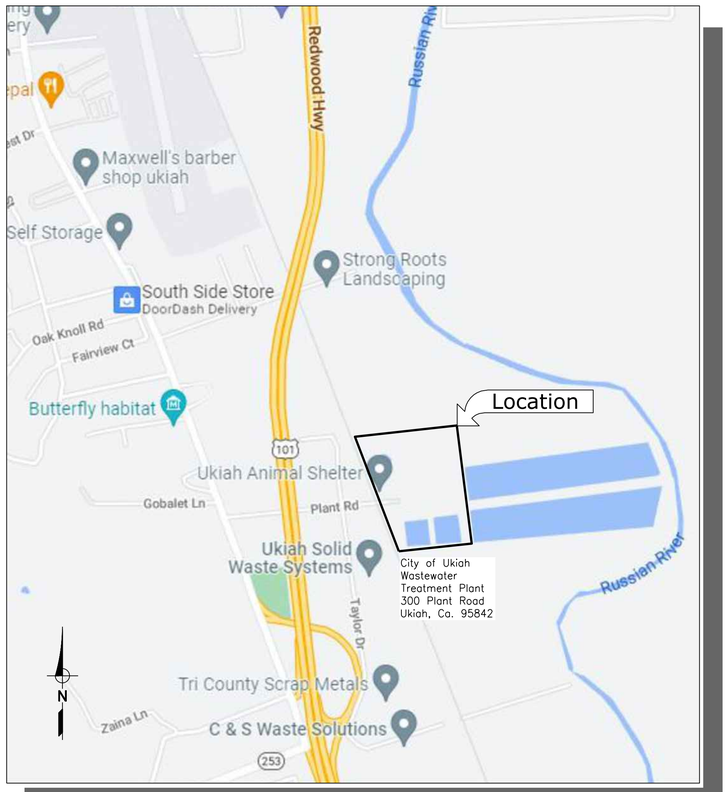
MENDICINO COUNTY, CALIFORNIA

THICKENING AND DEWATERING IMPROVEMENTS

JULY 2023



VICINITY MAP



LOCATION MAP

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY R. BANYAI
No. C60715
Exp. 12-31-24
CIVIL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

THIS LINE IS 1 INCH
AT FULL SCALE
IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : SMB
DESIGNED BY : TS
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
TITLE SHEET, LOCATION AND VICINITY MAPS

JOB NUMBER 592-50-22-14
DRAWING NUMBER G001
SHEET NUMBER 1 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\SAF Project\592-50-22-14-G001.dwg 7-17-23 08:35:08 AM sbarber

DRAWING INDEX

SHEET NUMBER	DRAWING NUMBER	DESCRIPTION
GENERAL		
1	G001	TITLE SHEET, LOCATION AND VICINITY MAPS
2	G002	DRAWING INDEX AND DESIGN CRITERIA
3	G003	LEGEND, SYMBOLS, AND ABBREVIATIONS
CIVIL		
4	C001	SITE PLAN
5	CD001	CIVIL DETAILS
DEMOLITION		
6	70-D-001	DEMOLITION AND MODIFICATION 1 – DAFT PLAN
7	70-D-002	DEMOLITION AND MODIFICATION 2 – DAFT SECTION 1
8	70-D-003	DEMOLITION AND MODIFICATION 3 – DAFT SECTION 2
9	70-D-004	DEMOLITION AND MODIFICATION 4 – SATURATION TANK PARTIAL PLAN, SECTIONS AND DETAIL
10	70-D-005	DEMOLITION AND MODIFICATION 5 – DISSOLVED AIR FLOATATION THICKENERS SECTION AND DETAILS
11	70-D-006	DEMOLITION AND MODIFICATION 6 – DAFT EQUIPMENT BUILDING PLAN
12	70-D-007	DEMOLITION AND MODIFICATION 7 – DAFT EQUIPMENT BUILDING SECTIONS
13	70-D-008	DEMOLITION AND MODIFICATION 8 – DISSOLVED AIR FLOATATION THICKENER 1 P&ID
14	70-D-009	DEMOLITION AND MODIFICATION 9 – DISSOLVED AIR FLOATATION THICKENER 2 P&ID
15	70-D-010	DEMOLITION AND MODIFICATION 10 – DAFT EQUIPMENT BUILDING DAFT AIR COMPRESSOR SYSTEM 1 OF 2 P&ID
16	70-D-011	DEMOLITION AND MODIFICATION 11 – DAFT EQUIPMENT BUILDING DAFT AIR COMPRESSOR SYSTEM 2 OF 2 P&ID
17	70-D-012	DEMOLITION AND MODIFICATION 12 – DAFT EQUIPMENT BUILDING DAFT AIR COMPRESSOR SYSTEM 2 OF 2 P&ID
18	70-D-013	DEMOLITION AND MODIFICATION 13 – DAFT EQUIPMENT BUILDING DAFT SATURATION SYSTEM P&ID
19	70-D-014	DEMOLITION AND MODIFICATION 14 – DAFT EQUIPMENT BUILDING POLYMER BLENDING SYSTEM 1 P&ID
20	70-D-015	DEMOLITION AND MODIFICATION 15 – DAFT EQUIPMENT BUILDING POLYMER BLENDING SYSTEM 2 P&ID
21	70-D-016	DAFT DEMO PHOTO DETAILS
22	70-D-017	DAFT POLYMER ROOM DEMO PHOTO DETAILS
23	75-D-001	SLUDGE DEWATERING BUILDING PLAN AND SECTIONS
24	75-D-003	BELT PRESS DEMO PHOTO DETAILS
STRUCTURAL		
25	00-S-001	STRUCTURAL GENERAL NOTES I
26	00-S-002	STRUCTURAL GENERAL NOTES II
27	00-S-003	STRUCTURAL GENERAL NOTES III, LEGEND AND ABBREVIATIONS
28	00-S-004	STRUCTURAL STANDARD DETAILS I
29	00-S-005	STRUCTURAL STANDARD DETAILS II
30	70-S-001	MISCELLANEOUS DETAILS
31	75-S-001	PLANS AND SECTIONS
32	75-S-002	PLANS AND SECTIONS
MECHANICAL		
33	70-M-001	DAFT EQUIPMENT PLAN
34	70-M-002	DAFT SECTION 1
35	70-M-003	DAFT SECTION 2
36	70-M-004	DAFT EQUIPMENT GENERAL ARRANGEMENT PLAN
37	70-M-005	DRAIN CONNECTION TO WET WELL
38	75-M-100	SLUDGE DEWATERING BUILDING PLAN AND SECTIONS
39	MD001	MECHANICAL DETAILS
ELECTRICAL		
40	00-E-001	SYMBOLS AND ABBREVIATIONS
41	00-E-002	GENERAL NOTES
42	00-E-003	ELECTRICAL DETAILS 1
43	00-E-004	ELECTRICAL DETAILS 2
44	00-E-005	MOTOR CONTROL SCHEMATICS
45	00-E-006	CONDUIT AND CONDUCTOR SCHEDULE
46	01-E-100	ELECTRICAL SITE 1 OF 2 AREA PLAN
47	01-E-101	ELECTRICAL SITE 2 OF 2 AREA PLAN
48	01-E-200	ENLARGED PRIMARY CLARIFIER AREA
49	01-E-201	ENLARGED WASHWATER RECOVERY POND AREA
50	12-E-101	POWER GENERATOR BUILDING PLAN
51	12-E-102	MCC12191 ONE LINE DIAGRAM
52	12-E-103	MCC12192 ONE LINE DIAGRAM
53	12-E-104	MCC12191 & MCC12192 ELEVATIONS
54	31-E-101	ENLARGED TRICKLING FILTER BUILDING PLAN
55	31-E-102	MCC31291 ONE LINE DIAGRAM
56	31-E-103	MCC31292 ONE LINE DIAGRAM
57	31-E-104	MCC31293 ONE LINE DIAGRAM
58	31-E-105	MCC31294 ONE LINE DIAGRAM
59	31-E-106	MCC31291 & MCC31292 ELEVATIONS
60	31-E-107	MCC31293 & MCC31294 ELEVATIONS

DRAWING INDEX

SHEET NUMBER	DRAWING NUMBER	DESCRIPTION
61	70-E-100	DAFT AREA DEMO PLAN
62	70-E-101	DAFT BUILDING DEMO PLAN
63	70-E-102	ENLARGED DAFT BUILDING PLAN
64	70-E-103	ENLARGED SAF 1 AREA PLAN
65	70-E-104	ENLARGED SAF 2 AREA PLAN
66	70-E-105	SAF AREA PLAN GROUNDING PLAN
67	70-E-110	MCC 70291 ONE LINE DEMO
68	70-E-111	MCC 70292 ONE LINE DEMO
69	70-E-112	MCC 70293 ONE LINE DEMO
70	70-E-113	MCC 70291 ONE LINE
71	70-E-114	MCC 70292 ONE LINE
72	70-E-115	MCC 70293 ONE LINE
73	70-E-116	MCC 70291 ELEVATION
74	70-E-117	MCC 70292 ELEVATION
75	70-E-118	MCC 70293 ELEVATION
76	70-E-119	PANEL SCHEDULES
77	75-E-100	DEWATERING BUILDING DEMO PLAN
78	75-E-101	DEWATERING BUILDING POWER PLAN
79	75-E-102	MCC-D ONE LINE DEMO
80	75-E-110	MCC-D ONE LINE DIAGRAM
81	75-E-111	MCC-D ELEVATION-DEMO
82	75-E-112	MCC-D ELEVATION
83	75-E-113	PANEL SCHEDULES
INSTRUMENTATION		
84	00-I-001	P&ID LEGEND AND ABBREVIATIONS
85	70-I-100	SAF No. 1 P&ID
86	70-I-101	SAF No. 2 P&ID
87	75-I-001	DEWATERING AREA PLC CABINET MODIFICATOINS
88	75-I-002	DEWATERING AREA PLC CABINET POWER DISTRIBUTION DIAGRAM
89	75-I-100	DEWATERING AREA P&ID

DESIGN CRITERIA

FLOWS & LOADING

FLOWS

ADWF	AVERAGE DRY WEATHER	MGD	3.01
PWDWF	PEAK WEEK DRY WEATHER	MGD	3.40
AWWF	AVERAGE WET WEATHER	MGD	6.89
PWWWF	PEAK WEEK WET WEATHER	MGD	15.8
PHWWF	PEAK HOUR WET WEATHER	MGD	24.5

SOLIDS THICKENING

MECHANICAL THICKENING EQUIPMENT (NEW)

TYPE			SUSPENDED AIR FLOATATION
NO.			2
PERFORMANCE		%	4 TO 7
FLOC TUBE SIZE		INCHES	10
WW FLOW, EA.	CONTINUOUS	GPM	<500
PS FLOW, EA.	INTERMITTENT	GPM	150
WWS FLOW, EA.	CONTINUOUS	GPM	10 - 30, MAX 250
PSC FLOW, EA.	INTERMITTENT	GPM	150
FLOW RANGE, EA.		GPM	150 - 500
MAXIMUM TSS		MG/L	2,000
OPERATING DAYS		DAYS/WEEK	7
OPERATING HOURS		HRS/DAY	24
TYPE			CLEARMIXER
NO.			2
DETENTION TIME		S	3 TO 6
MOTOR SIZE		HP	1

MECHANICAL THICKENING FROTH GENERATOR (NEW)

TYPE			MICRO-BUBBLE EMULSION
NO.			2
CHEMICAL STORAGE	TOTE		1
AIR VOLUME		%	30 - 40
DISCHARGE PRESSURE (MAXIMUM)		PSIG	20
GENERATOR FLOW CAPACITY, EA.		GPM	13
WATER REQUIREMENT		GPM	7.5
WATER PRESSURE	NON-POTABLE / PLANT EFFLUENT	PSIG	40
MOTOR SIZE		HP	5

MECHANICAL THICKENING POLYMER SYSTEM (NEW)

DELUTED POLYMER STORAGE			TOTE

EMULSION POLYMER BLENDING UNIT

NO.			2
DOSE		GPH	0.95
DILUTION WATER CAPACITY	PRIMARY MIXING	GPH	120 - 1,200
	POST DILUTION	GPH	120 - 1,200
METERING PUMP	NEAT POLYMER	GPH	0.15 - 3.0

SOLIDS DEWATERING

MECHANICAL DEWATERING EQUIPMENT (NEW)

TYPE		SCREW PRESS
NO.		1
INLET CAPACITY	DRY LB/HR	250
INLET CONSISTENCY	%	2
HYDRAULIC CAPACITY	GAL	30,000 - 40,000 @ 25 GPM
OUTLET CONSISTENCY	%	20
SOLIDS CAPTURE	%	92 - 96
NO. OF WATER SPRAY NOZZLES		66
WASH WATER FLOW RATE		650 GPD @ 40 PSI
OPERATING DAYS	DAYS/WEEK	7
OPERATING HOURS	HRS/DAY	24

FLOCCULATION TANK

NO.		1
MIXER MOTOR SIZE	HP	1
TANK CAPACITY	GAL	100

MECHANICAL DEWATERING POLYMER SYSTEM (NEW)

DILUTED POLYMER STORAGE			TOTE

EMULSION POLYMER BLENDING UNIT

NO.			1
DILUTION WATER CAPACITY	PRIMARY MIXING	GPH	120 - 1,200
	POST DILUTION	GPH	120 - 1,200
METERING PUMP	NEAT POLYMER	GPH	0.15 - 3.0

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY R. BANYAI
No. C60715
Exp. 12-31-24
CIVIL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

THIS LINE IS 1 INCH
AT FULL SCALE
IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : SMB
DESIGNED BY : TS
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DRAWING LIST AND DESIGN CRITERIA

JOB NUMBER 592-50-22-14
DRAWING NUMBER G002
SHEET NUMBER 2 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\SAF Project\592-50-22-14-G002.dwg 7-17-23 08:35:31 AM sbarber

LEGEND:CIVIL

- (N) ASPHALT CONCRETE
- (N) CONCRETE
- (N) CLASS II AB
- (G) GROUT
- 110 (E) GRADE CONTOURS
- 110 (N) GRADE CONTOURS
- (N) SLOPE
- (N) SWALE
- (E) FACILITY
- (N) FACILITY
- (F) FACILITY
- PROPERTY LINE
- × 34.8 (E) SPOT ELEVATION
- 73.00 (N) SPOT ELEVATION
- HV11 TEMPORARY SURVEY MONUMENT
- PERMANENT SURVEY MONUMENT

CIVIL/MECHANICAL

- 12" XX (E) PIPELINE
- 12" XX (N) PIPELINE
- 12" XX (N) PIPELINE UNDER CONCRETE
- 12" XX (F) PIPELINE
- (E) FENCE
- (N) FENCE
- (E) ELECTRICAL
- (N) ELECTRICAL
- T(UG) (E) UNDERGROUND TELEPHONE
- DEMOLISH (E) PIPE
- DEMOLISH (E) STRUCTURE

MECHANICAL

- NATURAL GRADE UNDISTURBED SOIL
- AC PAVING SECTION
- CONCRETE SECTION
- AGGREGATE BASE /CRUSHED ROCK
- COMPACTED SOIL
- UNDISTURBED SOIL
- CENTER LINE
- BSN-1001 EQUIPMENT CALLOUT

LEGEND - PIPING

SINGLE LINE	DOUBLE LINE	
		FLANGED JOINT
		PLAIN OR GROOVED END MECHANICAL COUPLING
		PUSH ON, MECHANICAL /BALL & SOCKET JOINT
		WELDED JOINT
		RESTRAINED SLEEVE TYPE MECHANICAL COUPLING (STL PIPE ONLY)
		RESTRAINED SLEEVE TYPE MECHANICAL COUPLING (DIP)
		SLEEVE TYPE MECHANICAL COUPLING
		FLANGED COUPLING ADAPTER

SINGLE LINE	DOUBLE LINE	
		RESTRAINED FLANGE COUPLING ADAPTER (STL PIPE ONLY)
		RESTRAINED FLANGED COUPLING ADAPTER (DIP)
		UNION
		ELASTOMER & FABRIC EXPANSION JOINT
		EXPANSION JOINT (SEE SPECS FOR TYPE)
		FLEXIBLE METAL HOSE

SINGLE LINE	DOUBLE LINE	
		ELBOW UP
		ELBOW DOWN
		TEE UP
		TEE DOWN
		LATERAL UP
		LATERAL DOWN
		REDUCER

- THREE WAY VALVE
- GATE VALVE (NORMALLY OPEN)
- GATE VALVE (NORMALLY CLOSED)
- PLUG VALVE (NORMALLY OPEN)
- PLUG VALVE (NORMALLY CLOSED)
- BALL VALVE (NORMALLY OPEN)
- BALL VALVE (NORMALLY CLOSED)
- BUTTERFLY VALVE
- GLOBE VALVE
- DIAPHRAGM VALVE
- ANGLE VALVE
- PINCH VALVE
- NEEDLE VALVE
- DOUBLE LEAF CHECK VALVE
- CHECK VALVE
- BALL CHECK VALVE
- PUMP DISCHARGE VALVE
- GAUGE OR ROOT VALVE
- KNIFE GATE VALVE
- FLAP GATE
- HOSE VALVE
- BALANCING COCK
- CIRCUIT SETTER
- PRESSURE & VACUUM RELIEF VALVE
- VACUUM RELIEF VALVE
- PRESSURE RELIEF VALVE
- STRAINER
- IN-LINE, SPRING LOADED RELIEF VALVE
- PRESSURE REGULATING VALVE
- BACK PRESSURE REGULATING VALVE
- SOLENOID VALVE
- DIAPHRAGM OPERATED VALVE
- M MOTOR OPERATED VALVE
- PISTON OPERATED VALVE
- MUD VALVE
- WHARF HYDRANT
- FIRE HYDRANT
- U UTILITY STATION
- HOSE BIB VALVE
- BACK FLOW PREVENTER
- CLEAN OUT

SECTION & DETAIL DESIGNATIONS FOR CIVIL, MECHANICAL & ARCHITECTURAL DRAWINGS

SECTION CUT ON DWG M102: A / M102 — A = SECTION LETTER; M102 = DRAWING WHERE SECTION APPEARS

ON DWG M102 THIS SECTION IS IDENTIFIED AS: A / M101 — A = SECTION LETTER; M101 = DRAWING FROM WHICH SECTION WAS TAKEN

DETAILS ARE CROSS REFERENCED IN A SIMILAR MANNER, EXCEPT THAT DETAILS ARE IDENTIFIED BY NUMBER RATHER THAN LETTER

PIPING DESIGNATIONS

	NEW PIPING	EXISTING PIPING	FUTURE PIPING
PIPING SYSTEM SYMBOL SEE LIST THIS DRAWING			
PIPE SIZE	6" PD	6" PD	6" PD

PIPING SYSTEM ABBREVIATIONS

BDR	BIOSOLIDS DRAIN RETURN
DEC	DECANT
ML	MIXED LIQUOR
NPW	NON-POTABLE WATER
PD	PROCESS DRAIN
RAS	RETURN ACTIVATED SLUDGE
SDR	STORM DRAIN

ABBREVIATIONS

AB	AGGREGATE BASE
AC	ASPHALT CONCRETE
AFF	ABOVE FINISHED FLOOR
AL, ALUM	ALUMINUM
APPROX	APPROXIMATE
ARV	AIR RELEASE VALVE
ASPH	ASPHALT
AVV	AIR AND VACUUM VALVE
BF	BLIND FLANGE
BFV	BUTTERFLY VALVE
BLDG	BUILDING
BV	BALL VALVE
CB	CATCH BASIN
CC	CENTER TO CENTER
CL, ℄	CENTER LINE
CLR	CLEAR
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CO	CLEAN OUT
CONC	CONCRETE
CONT	CONTINUOUS
CV	CHECK VALVE
CY	CUBIC YARDS
D	DRAIN
DEMO	DEMOLISH
DIA, ⌀	DIAMETER
DIP	DUCTILE IRON PIPE
DOM	DOMESTIC
DT	DRIP TRAP
DWG	DRAWING
EA	EACH
ECC	ECCENTRIC
ED	EQUIPMENT DRAIN
EF	EACH FACE
EG	EXISTING GRADE
EL	ELEVATION
ELEC	ELECTRIC
EP	EDGE OF PAVEMENT
EQUIP	EQUIPMENT
EW	EACH WAY
EX,(E)	EXISTING
EXP	EXPANSION
(F)	FUTURE
FCA	FLANGED COUPLING ADAPTER
FCO	FLOOR CLEANOUT
FCV	FLOW CONTROL VALVE
FD	FLOOR DRAIN
FF	FINISHED FLOOR
FG	FINISH GRADE
FL	FLOW LINE
FLG	FLANGE
FNPT	FEMALE NATIONAL PIPE THREAD
FRP	FIBERGLASS REINFORCED PLASTIC
FS	FINISHED SURFACE
GALV	GALVANIZED
GHS	GRIT HANDLING SYSTEM
GS	GROUND SURFACE
GRVL	GRAVEL
GV	GATE VALVE
HORZ	HORIZONTAL
HP	HIGH POINT, HORSE POWER
HWL	HIGH WATER LEVEL
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
INV	INVERT
IPS	IRON PIPE SIZE
LB	POUND
LWL	LOW WATER LEVEL
MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MFR	MANUFACTURER
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MIN	MINIMUM
MJ	MECHANICAL JOINT
MNPT	MALE NATIONAL PIPE THREAD
MOV	MOTOR OPERATED VALVE
(N)	NEW
NIC	NOT IN CONTRACT
No.	NUMBER
NOM	NOMINAL
NPT	NATIONAL PIPE THREAD
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER
OS&Y	OUTSIDE SCREW & YOKE
PAV'T	PAVEMENT
PE	PLAIN END
PG	PRESSURE GAUGE
PL, ℗	PLATE, PROPERTY LINE
PRV	PRESSURE RELIEF VALVE
PRV	PRESSURE REDUCING VALVE
PS	PUMP STATION
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE PIPE
R	RADIUS
RC	RELATIVE COMPACTION
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
RED	REDUCER
REIN	REINFORCED
REQ'D	REQUIRED
R&R	REMOVE & RELOCATE
R&S	REMOVE & SALVAGE
R/W	RIGHT OF WAY
S	SLOPE
SCH	SCHEDULE
SCR	SCREEN
SD	SANITARY DRAIN
SDR	STANDARD DIMENSION RATIO
SHT	SHEET
SST	STAINLESS STEEL
SSB	STAINLESS STEEL BOLT
ST	SEDIMENT TRAP
STA	STATION
STL	STEEL
STRUCT	STRUCTURAL
SW	SIDEWALK
T&B	TOP & BOTTOM
TG	TOP OF GRATE
TOC	TOP OF CONCRETE
TOW	TOP OF WALL
TYP	TYPICAL
UG	UNDERGROUND
UV	ULTRAVIOLET
V	VENT
VAR	VARIOUS
VERT	VERTICAL
VTR	VENT THROUGH ROOF
W/	WITH
WCO	WALL CLEANOUT
W/O	WITH OUT
WS	WATER SURFACE
WSE	WATER SURFACE ELEVATION
YCO	YARD CLEANOUT

REGISTERED PROFESSIONAL ENGINEER — TIMOTHY R. BANYAI — No. C60715 Exp. 12-31-24 — CIVIL — STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

THIS LINE IS 1 INCH AT FULL SCALE IF NOT SCALE ACCORDINGLY

SCALE : NONE
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DESIGNED BY : TS
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

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Ukiah Utilities — A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
LEGEND, SYMBOLS, AND ABBREVIATIONS

JOB NUMBER 592-50-22-14
DRAWING NUMBER G003
SHEET NUMBER 3 OF 89
REVISION

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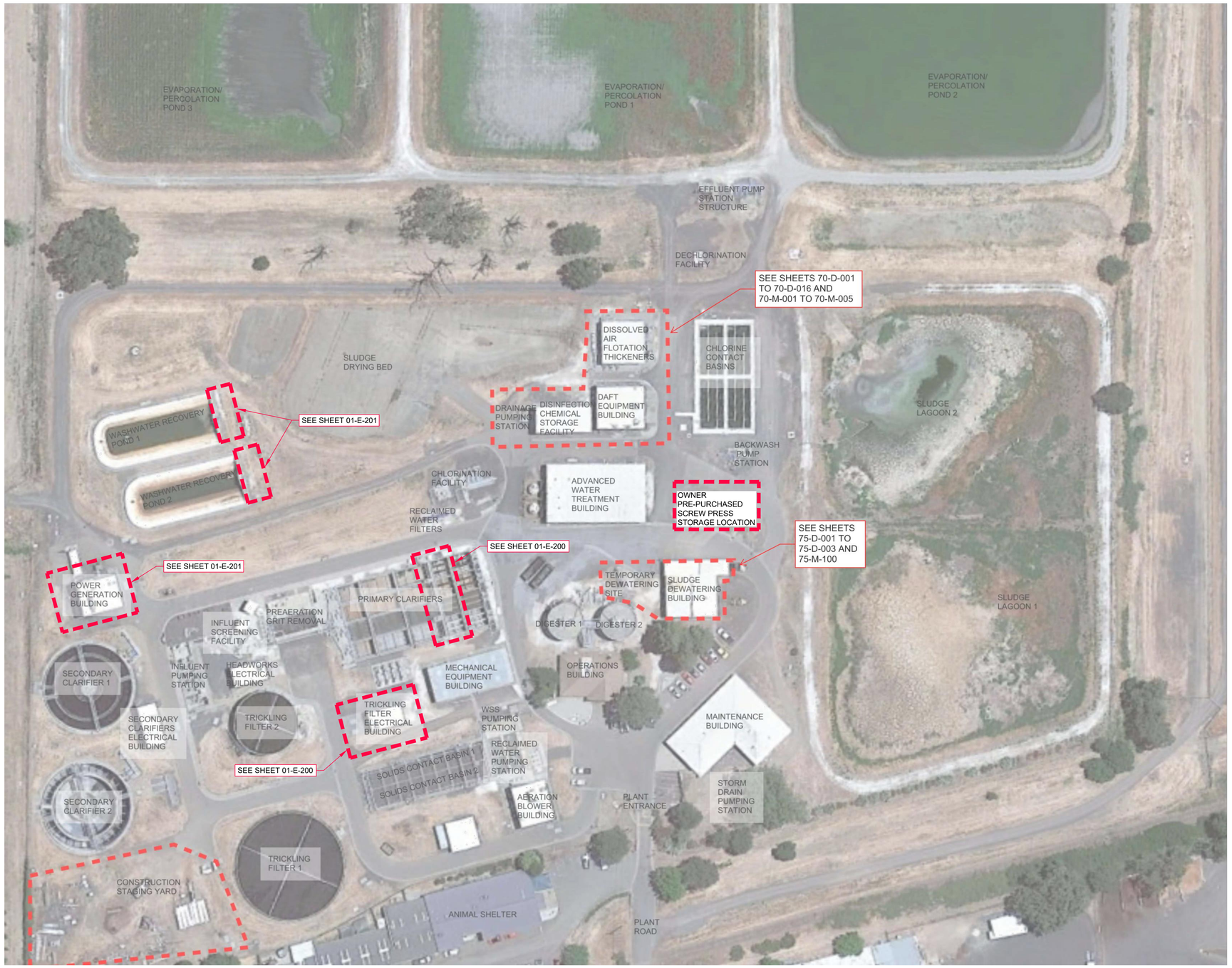

DATUM:
HORIZONTAL DATUM – NAD 83
VERTICAL DATUM – TOP SLAB OF OLD OPERATIONS BUILDING AT NORTHERN SLIDING DOOR ALONG WEST SIDE OF BUILDING – ELEVATION 577.03

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\SAF Project\592-50-22-14-C001.dwg 7-17-23 08:33:36 AM sbarber

REGISTERED PROFESSIONAL ENGINEER TIMOTHY R. BANYAI No. C60715 Exp. 12-31-24 CIVIL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

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NO.	ZONE	REVISIONS	BY	DATE
1		ADDENDUM NO. 3	TRB	5/02/23
2		CONFORMED TO ADDEENDA	TRB	7/17/23

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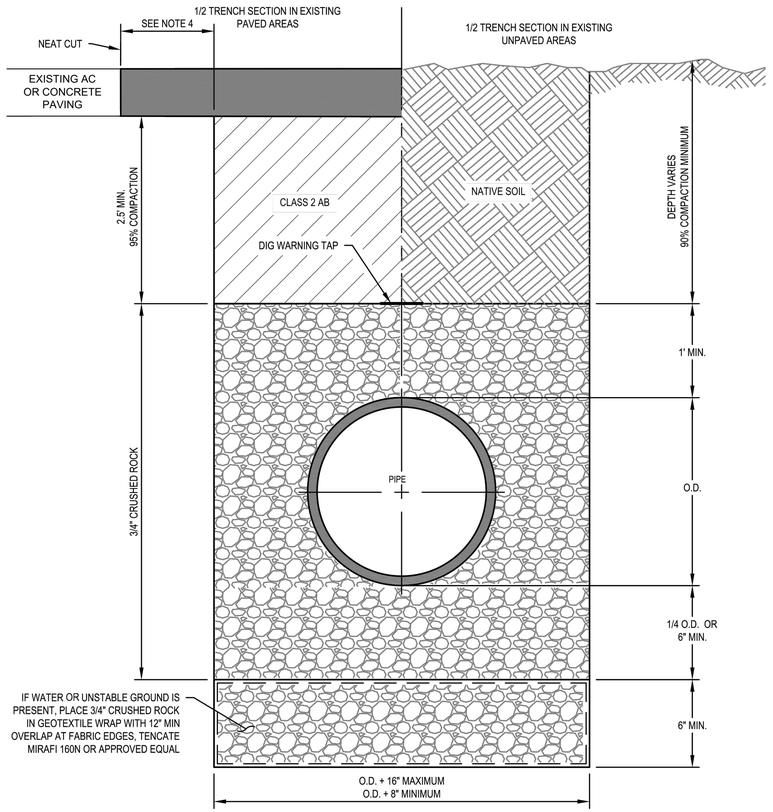
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
SITE PLAN

JOB NUMBER 592-50-22-14
DRAWING NUMBER C001
SHEET NUMBER 4 OF 89
REVISION



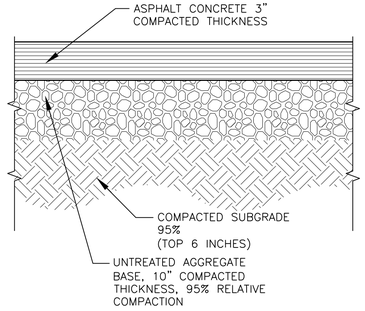
NOTES:

1. PAVEMENT SHALL BE REPLACED PER STANDARD TRENCH BACKFILL DETAIL.
2. ASPHALT CONCRETE (AC) MUST BE SAWCUT FULL DEPTH.
3. IF DISTANCE BETWEEN EDGE OF TRENCH TO GUTTER LIP (OR EDGE OF PAVEMENT) IS 4' OR LESS, THEN REMOVE ALL AC UP TO GUTTER LIP (OR EDGE OF PAVEMENT) AND REPAVE.
4. FINAL PAVING SHALL CONSIST OF THE TRENCH WIDTH PLUS 12" ON EACH SIDE OF THE TRENCH.
5. THESE ARE MINIMUM REQUIREMENTS. IF OTHER JURISDICTIONAL (CITY, COUNTY, STATE) AGENCY REQUIREMENTS EXCEED THOSE SHOWN, THE HIGHER REQUIREMENTS SHALL BE MET.
6. RECYCLED AB IS NOT ALLOWED.

TYPICAL TRENCH SECTION IN PAVED AND UNPAVED AREAS

DETAIL 1 TYP

NOT TO SCALE

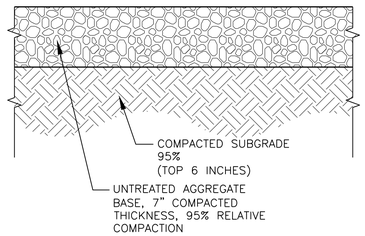


NOTE:
ALL PAVEMENT SHALL BE PLACED PER THIS DETAIL, UNO

NEW AC PAVEMENT

DETAIL 2 TYP

NOT TO SCALE



NEW GRAVEL BASE

DETAIL 3 TYP

NOT TO SCALE

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY R. BANYAI
No. C60715
Exp. 12-31-24
CIVIL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

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SCALE : AS SHOWN
DRAWN BY : SMB
DESIGNED BY : TS
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

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Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
CIVIL DETAILS

JOB NUMBER 592-50-22-14
DRAWING NUMBER CD001
SHEET NUMBER 5 OF 89
REVISION

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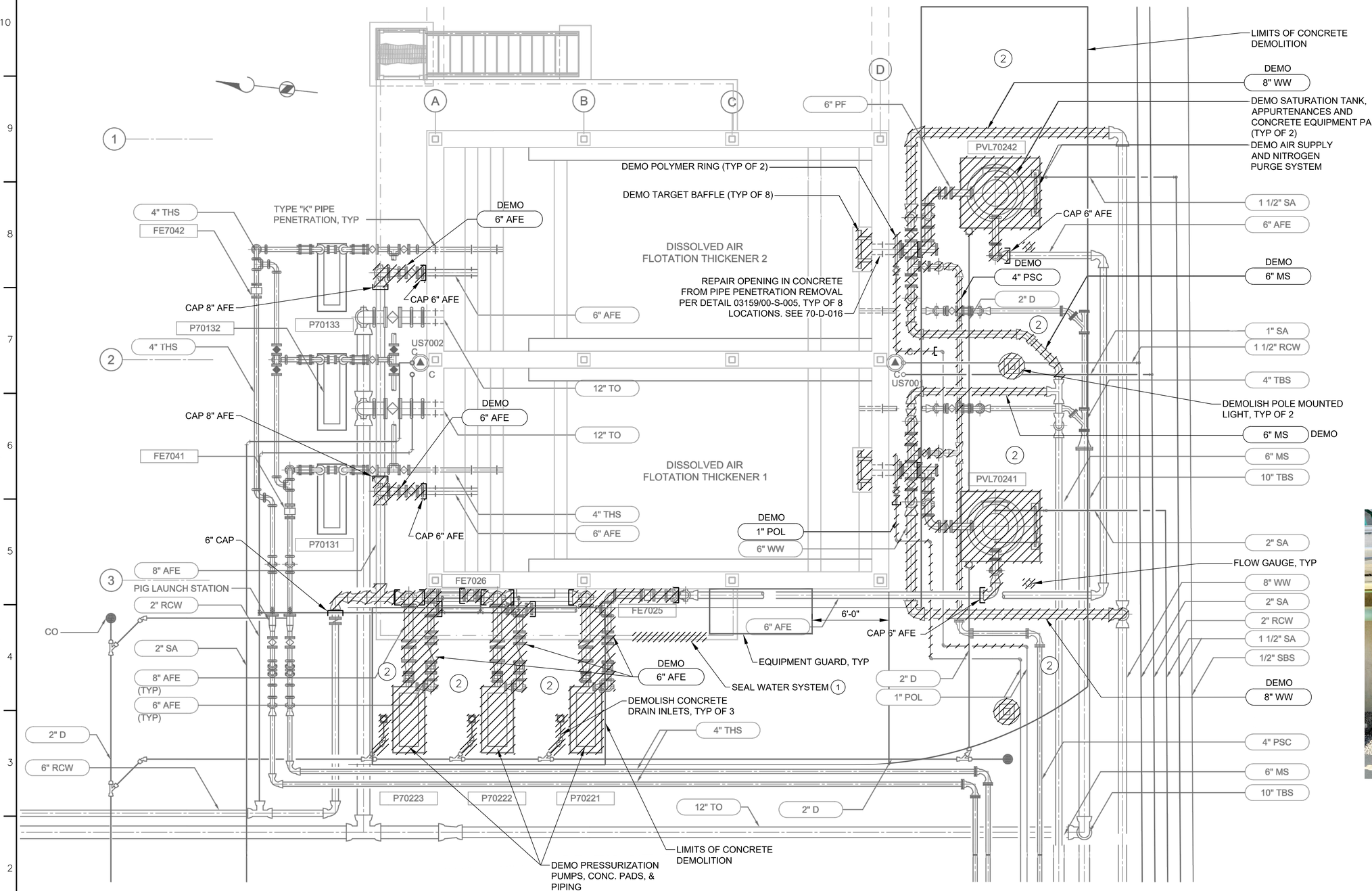

NOTES:
1. FIELD VERIFY INFORMATION SHOWN ON THIS DRAWING. THIS DRAWING IS NOT AN "AS-BUILT" DRAWING.
2. SEE DRAWING 70-D-016 PHOTOS FOR ADDITIONAL DEMOLITION REQUIREMENTS.

(1) DEMOLISH SEAL WATER SYSTEM

(2) DEMOLISH CONCRETE PAD IN THIS AREA AND REPLACE WITH NEW CONCRETE PAD. SEE DETAIL 03074/00-S-004.

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY R. BANYAI
No. C60715
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STATE OF CALIFORNIA

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1		CONFORMED TO ADDENDA	TRB	7/17/23

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Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DEMOLITION AND MODIFICATION 1
DAFT PLAN

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-D-001
SHEET NUMBER 6 OF 89
REVISION

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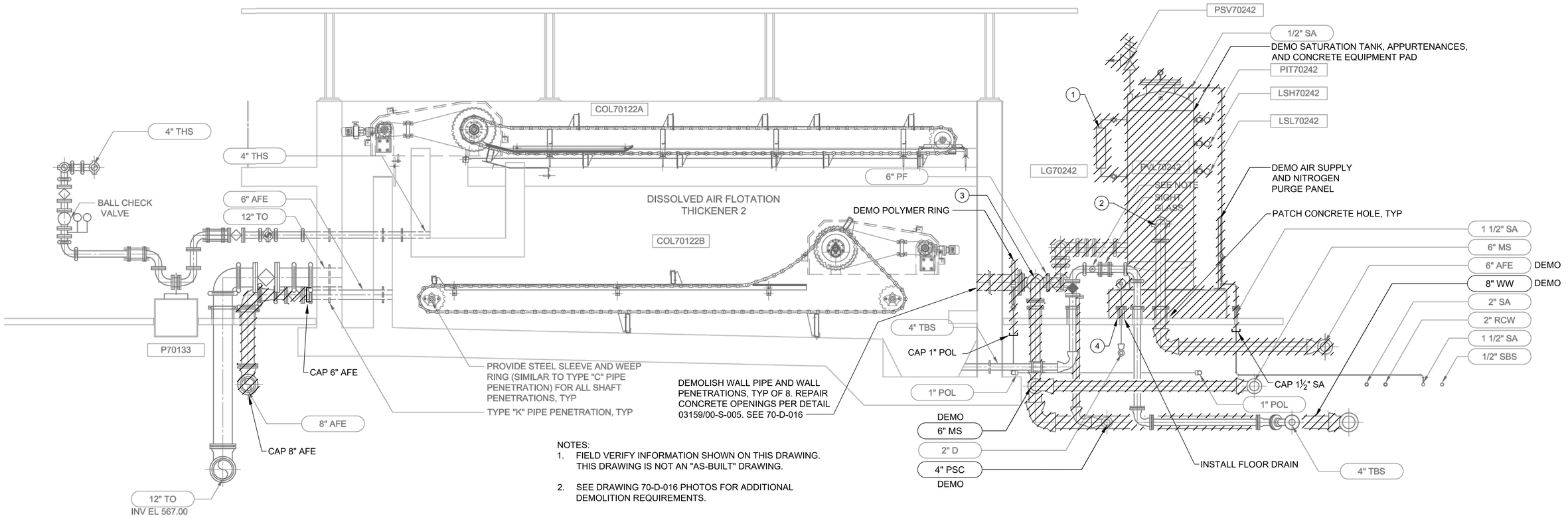

NOTES:
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2. SEE DRAWING 70-D-016 PHOTOS FOR ADDITIONAL DEMOLITION REQUIREMENTS.

(1) DEMOLISH MAGNETIC LEVEL INDICATOR, TYP OF 2

(2) DEMOLISH 6" AFE PIPING

(3) DEMOLISH6" MS & 4" TBS PIPING

(4) DEMOLISH DRAIN, TYP OF 6

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY R. BANYAI
No. C60715
Exp. 12-31-24
CIVIL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
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1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DEMOLITION AND MODIFICATION 2
DAFT SECTION 1

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-D-002
SHEET NUMBER 7 OF 89
REVISION

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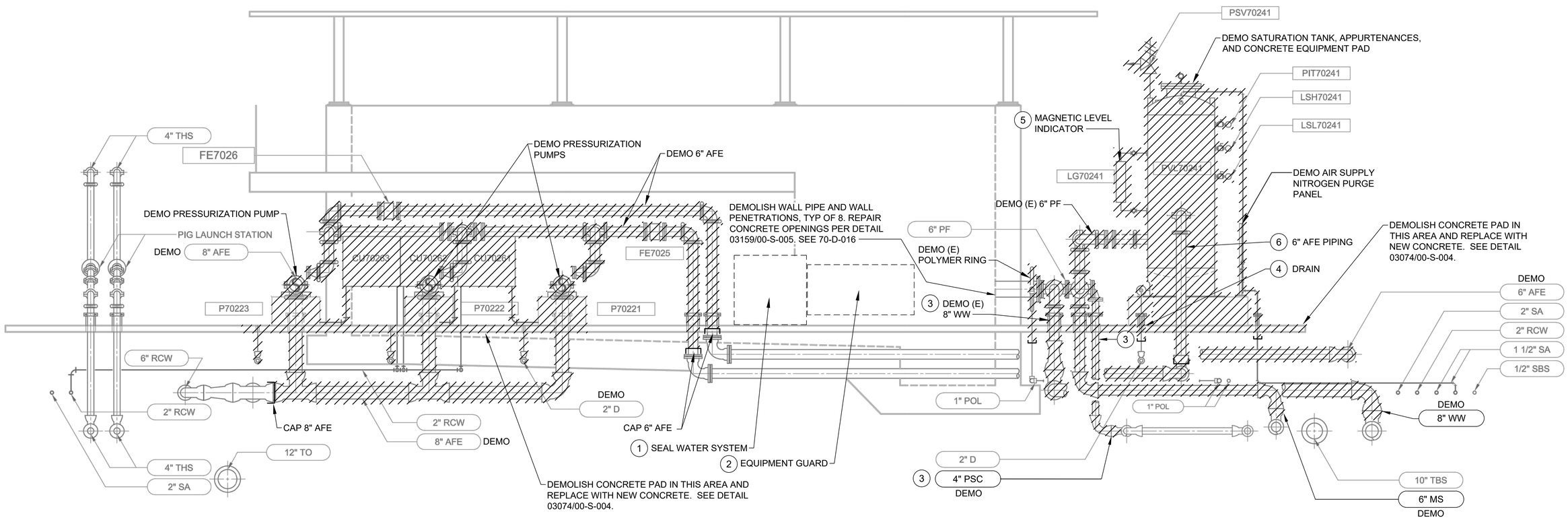
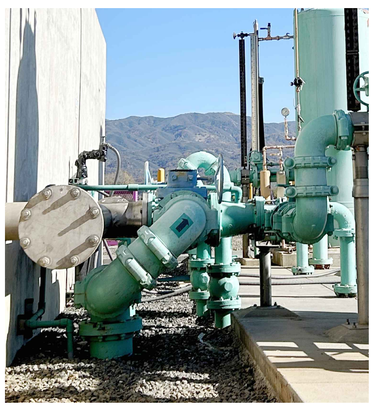


NOTES:
1. FIELD VERIFY INFORMATION ON THIS DRAWING. THIS DRAWING IS NOT AN "AS-BUILT" DRAWING.
2. SEE DRAWING 70-D-016 PHOTOS FOR ADDITIONAL DEMOLITION REQUIREMENTS.

1 DEMOLISH SEAL WATER SYSTEM

2 PROTECT EQUIPMENT GUARD IN PLACE, TYP OF 2



3 DEMOLISH 8" WW AND 4" PSC PIPING

4 DEMOLISH DRAIN, TYP OF 6

5 DEMOLISH MAGNETIC LEVEL INDICATOR, TYP OF 2

6 DEMOLISH 6" AFE PIPING

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY R. BANYAI
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1		CONFORMED TO ADDENDA	TRB	7/17/23

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CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DEMOLITION AND MODIFICATION 3
DAFT SECTION 2

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-D-003
SHEET NUMBER 8 OF 89
REVISION

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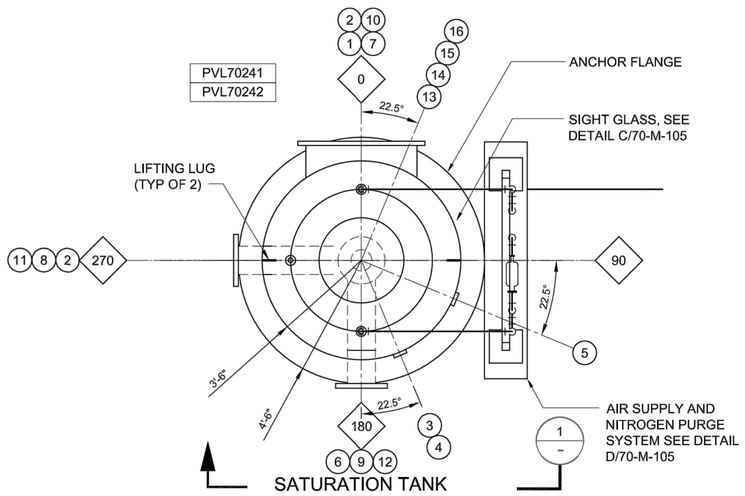
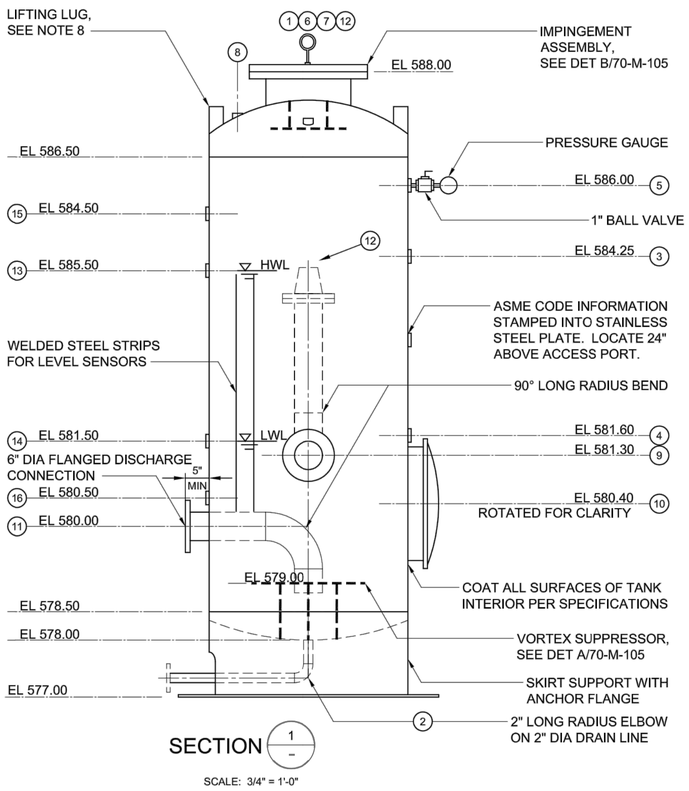


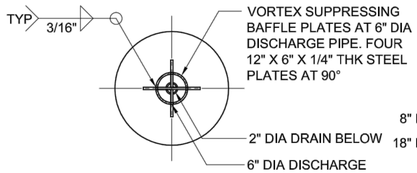
PARTIAL PLAN

SCALE: 3/4" = 1'-0"



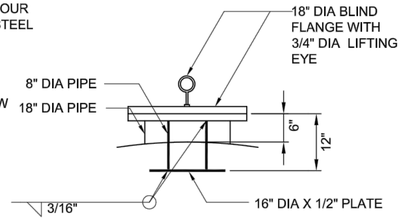
SECTION

SCALE: 3/4" = 1'-0"



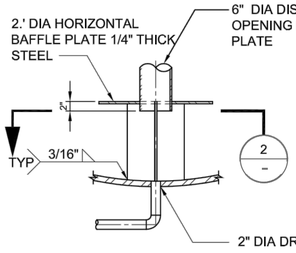
SECTION

SCALE: 3/4" = 1'-0"



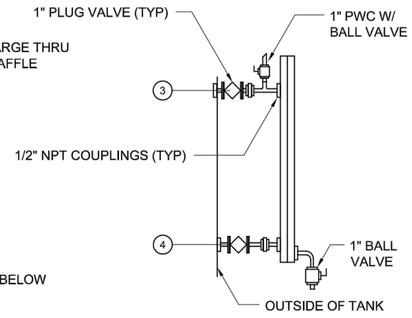
IMPINGEMENT ASSEMBLY DETAIL

SCALE: 3/4" = 1'-0"



VORTEX SUPPRESOR DETAIL

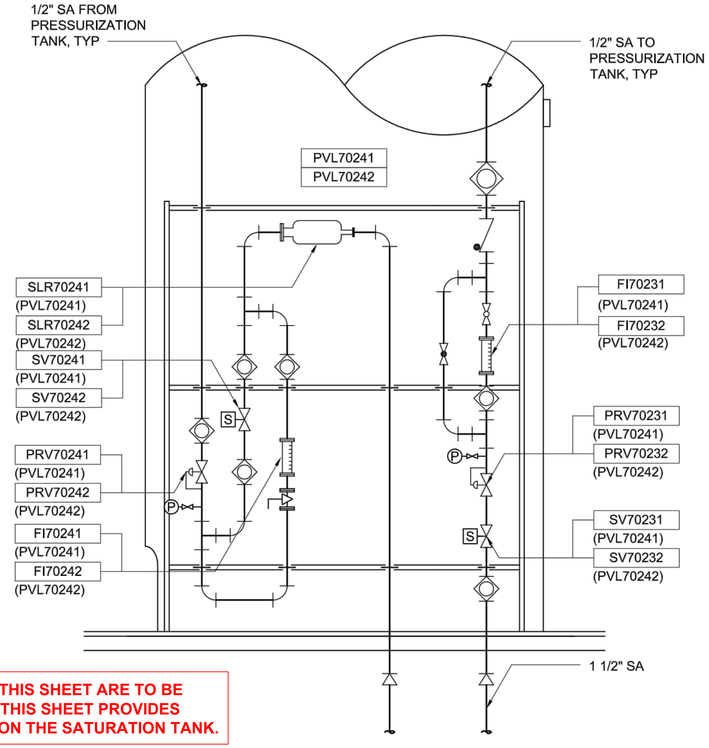
SCALE: 3/4" = 1'-0"



SIGHT GLASS DETAIL

NO SCALE

NOTES:
1. FIELD VERIFY INFORMATION ON THIS DRAWING. THIS DRAWING IS NOT AN "AS-BUILT" DRAWING.
2. SEE DRAWING 70-D-016 PHOTOS FOR ADDITIONAL DEMOLITION REQUIREMENTS.



ALL ITEMS ON THIS SHEET ARE TO BE DEMOLISHED. THIS SHEET PROVIDES INFORMATION ON THE SATURATION TANK.

RECYCLE TANK FITTING/NOZZLE SCHEDULE

NUMBER	DESCRIPTION	SIZE	TYPE	COMMENTS
1	IMPINGEMENT ASSEMBLY	18"	FLG	SEE DETAIL B/70-M-105
2	DRAIN ASSEMBLY	2"	FLG	W/ COLLAR STIFFENER
3	SIGHT GLASS	1"	NPT	SEE DETAIL C/70-M-105
4	SIGHT GLASS	1"	NPT	SEE DETAIL C/70-M-105
5	PRESSURE GAUGE	1"	NPT	
6	AIR EXHAUST	1/2"	NPT	
7	AIR SUPPLY	1/2"	NPT	
8	ASME SAFETY VALVE TAP	1"	NPT	SET FOR 100 PSIG
9	INLET	6"	FLG	
10	24" DIA ACCESS PORT	24" DIA	FLG	HINGED COVER PLATE
11	DISCHARGE	6"	FLG	W/ COLLAR STIFFENER
12	INLET/REDUCER	6" X 3"	FLG	
13	LEVEL CONTROL HIGH TAP	1"	NPT	
14	LEVEL CONTROL LOW TAP	1"	NPT	
15	LEVEL CONTROL HIGH HIGH TAP	1"	NPT	
16	LEVEL CONTROL LOW LOW TAP	1"	NPT	

AIR SUPPLY AND NITROGEN PURGE SYSTEM DETAIL

SCALE: 1 1/2" = 1'-0"

SATURATION TANK AIR NOTES:

1. UNIONS SHALL BE USED TO ALLOW ANY SECTION OR RUN OF PIPE TO BE DISCONNECTED WITHOUT TAKING DOWN ADJACENT RUNS
2. PIPING SHALL BE 1/2-INCH, UNLESS OTHERWISE SHOWN.
3. PROVIDE STAINLESS STEEL COUPLING EACH SIDE OF ROTOMETER WITH DI-ELECTRIC UNIONS.
4. NOT USED.
5. PIPE SUPPORT SHALL BE MOUNTED BY ANCHOR BOLTS, PER SPEC SECTION 05501, TO THE RECYCLE TANK EQUIPMENT PAD. MIN 8" SHALL BE PROVIDED BETWEEN THE RECYCLE TANK AND PIPE SUPPORT.
6. UNLESS OTHERWISE SPECIFIED, ROTAMETERS SHALL CONFORM TO THE REQUIREMENTS OF SECTION 15095 AND SHALL BE SIZED IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
7. REFERENCE SPECIFICATION 15050 FOR PIPING SYSTEM GENERAL REQUIREMENTS.
8. PROVIDE (2) LIFTING LUGS WITH A MINIMUM CAPACITY OF THE EMPTY TANK WEIGHT. PLACE LIFTING LUGS AT BALANCING POINTS TO ENSURE TANKS REMAINS VERTICAL DURING LIFTING.

REGISTERED PROFESSIONAL ENGINEER — TIMOTHY R. BANYAI — No. C60715 Exp. 12-31-24 — CIVIL — STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

THIS LINE IS 1 INCH AT FULL SCALE IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : SMB
DESIGNED BY : TS
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST Water. Engineered.

Ukiah Utilities — A Department of the City of Ukiah

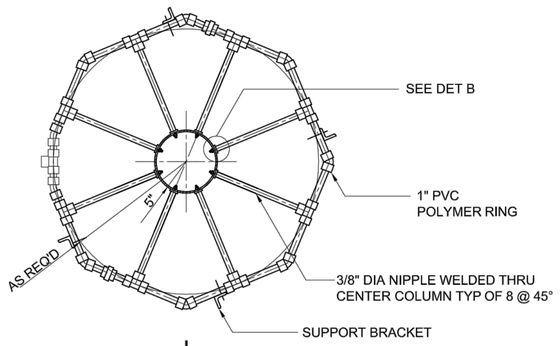
CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DEMOLITION AND MODIFICATION 4 SATURATION TANK PARTIAL PLAN, SECTIONS AND DETAIL

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-D-004
SHEET NUMBER 9 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\SAF Project\592-50-22-14-70-D-004.dwg 7-17-23 08:45:11 AM sbarber

ALL ITEMS ON THIS SHEET ARE TO BE DEMOLISHED. THIS SHEET PROVIDES INFORMATION ON THE POLYMER RING.

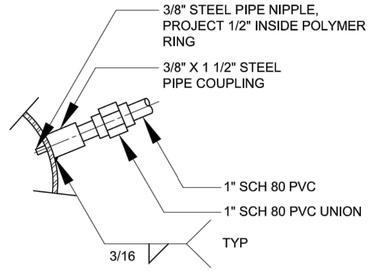
NOTES:
1. FIELD VERIFY INFORMATION ON THIS DRAWING. THIS DRAWING IS NOT AN "AS-BUILT" DRAWING.
2. SEE DRAWING 70-D-016 PHOTOS FOR ADDITIONAL DEMOLITION REQUIREMENTS.



POLYMER RING

DETAIL A

SCALE: 1" = 1'-0"



DETAIL B

NO SCALE

NOTE:

FLANGES ROTATED FOR CLARITY. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR DETAIL CONSTRUCTION AND MATERIALS FOR DAFT BACK PRESSURE VALVES.

SECTION 1

SCALE: 1" = 1'-0"

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY R. BANYAI
No. C60715
Exp. 12-31-24
CIVIL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

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SCALE : NONE
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DESIGNED BY : TS
PROJ. MGR. : TRB

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1		CONFORMED TO ADDENDA	TRB	7/17/23

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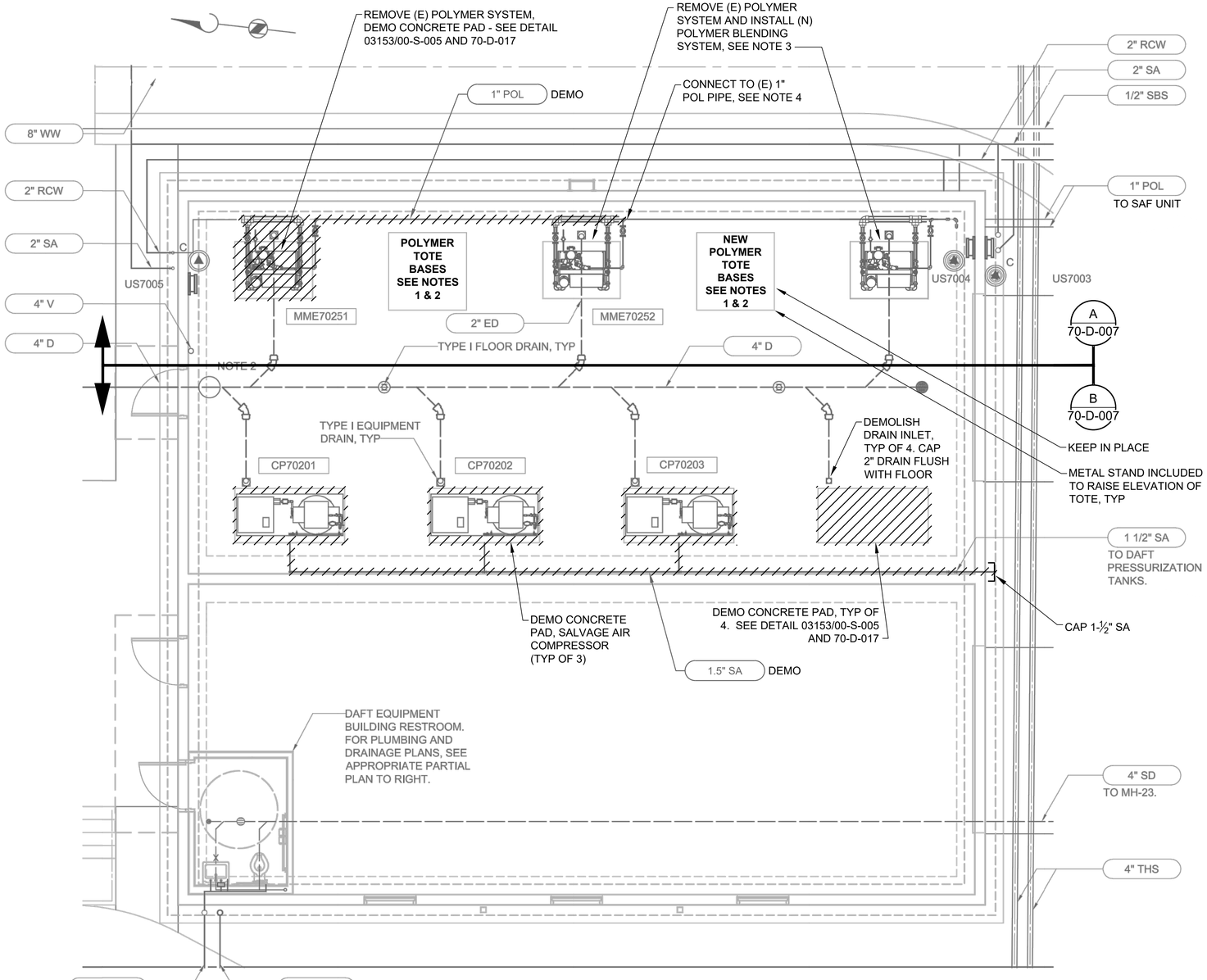
CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS

DEMOLITION AND MODIFICATION 5 - DISSOLVED AIR FLOTATION THICKENERS SECTION AND DETAILS

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-D-005
SHEET NUMBER 10 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\SAF Project\592-50-22-14-70-D-005.dwg 7-17-23 08:46:16 AM sbarber



DAFT EQUIPMENT BUILDING

PLAN

SCALE: 1/4" = 1'-0"

NOTES:
1. PROVIDE TWO 45.5" WIDE BY 52" LONG BY 26.5" HIGH TOTE STANDS, PIG IBC TOTE DISPENSING STAND, OR EQUAL.
2. LOCATE TOTE DISPENSING STAND ON CONCRETE PAD.
3. PROVIDE 1" PVC FLEXIBLE HOSES FROM POLYMER TOTE TO NEW POLYMER BLENDING SYSTEM. PROVIDE TWO 1" PVC BALL VALVES.
4. PROVIDE 1" PVC FLEXIBLE HOSES FROM POLYMER BLENDING SYSTEM TO CONNECTION AT EXISTING 1" POL PIPE. PROVIDE TWO 1" PVC BALL VALVES.
5. FIELD VERIFY INFORMATION ON THIS DRAWING. THIS DRAWING IS NOT AN "AS BUILT" DRAWING.
6. SEE DRAWING 70-D-016 PHOTOS FOR ADDITIONAL DEMOLITION REQUIREMENTS.

NOTES:
1. FIELD VERIFY INFORMATION ON THIS DRAWING. THIS DRAWING IS NOT AN "AS-BUILT" DRAWING.
2. SEE DRAWING 70-D-016 PHOTOS FOR ADDITIONAL DEMOLITION REQUIREMENTS.

REGISTERED PROFESSIONAL ENGINEER TIMOTHY R. BANYAI No. C60715 Exp. 12-31-24 CIVIL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

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SCALE : NONE
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DESIGNED BY : TS
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

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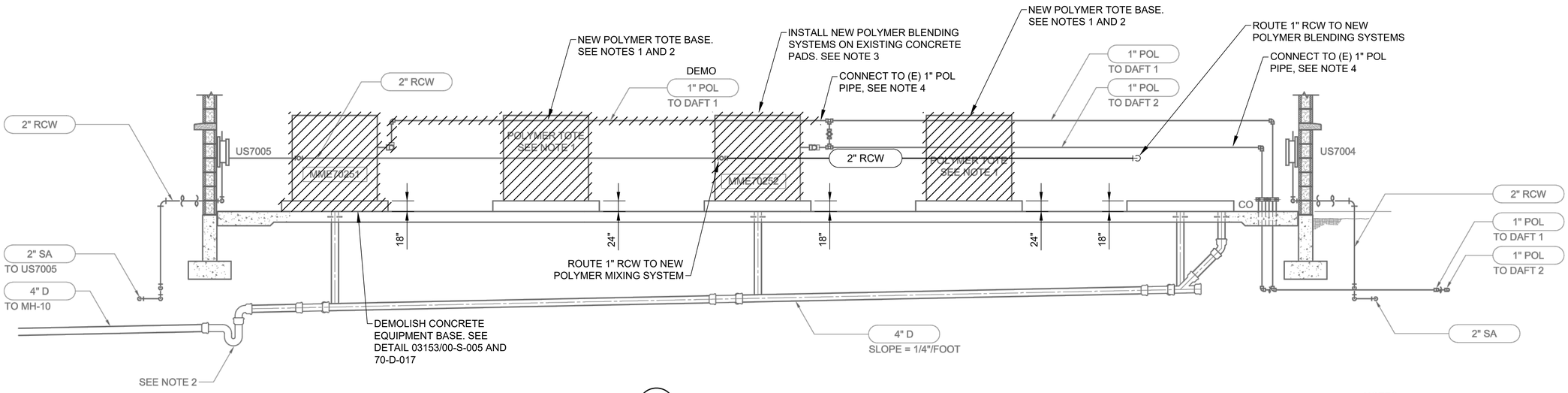
CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DEMOLITION AND MODIFICATION 6 - DAFT EQUIPMENT BUILDING PLAN AND PARTIAL PLANS

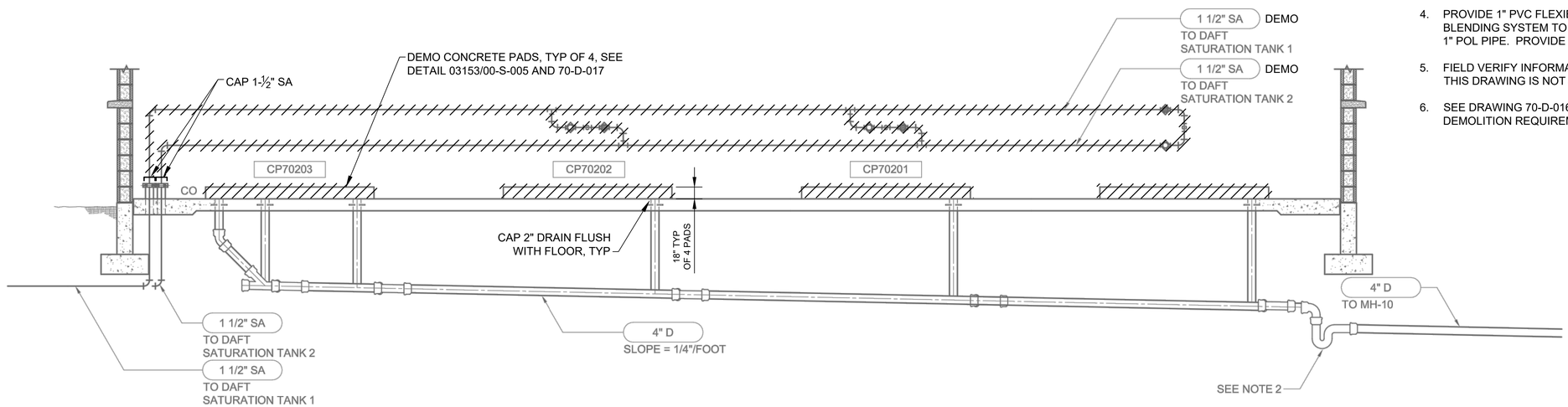
JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-D-006
SHEET NUMBER 11 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\SAF Project\592-50-22-14-70-D-006.dwg 7-17-23 08:46:54 AM sbarber



SECTION A 70-D-006

NOT TO SCALE



SECTION B 70-D-006

NOT TO SCALE

NOTES:

1. PROVIDE TWO 45.5" WIDE BY 52" LONG BY 26.5" HIGH TOTE STANDS, PIG IBC TOTE DISPENSING STAND, OR EQUAL.
2. LOCATE TOTE DISPENSING STAND ON CONCRETE PAD.
3. PROVIDE 1" PVC FLEXIBLE HOSES FROM POLYMER TOTE TO NEW POLYMER BLENDING SYSTEM. PROVIDE TWO 1" PVC BALL VALVES.
4. PROVIDE 1" PVC FLEXIBLE HOSES FROM POLYMER BLENDING SYSTEM TO CONNECTION AT EXISTING 1" POL PIPE. PROVIDE TWO 1" PVC BALL VALVES.
5. FIELD VERIFY INFORMATION ON THIS DRAWING. THIS DRAWING IS NOT AN "AS BUILT" DRAWING.
6. SEE DRAWING 70-D-016 PHOTOS FOR ADDITIONAL DEMOLITION REQUIREMENTS.

REGISTERED PROFESSIONAL ENGINEER
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CIVIL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
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PROJ. MGR. : TRB

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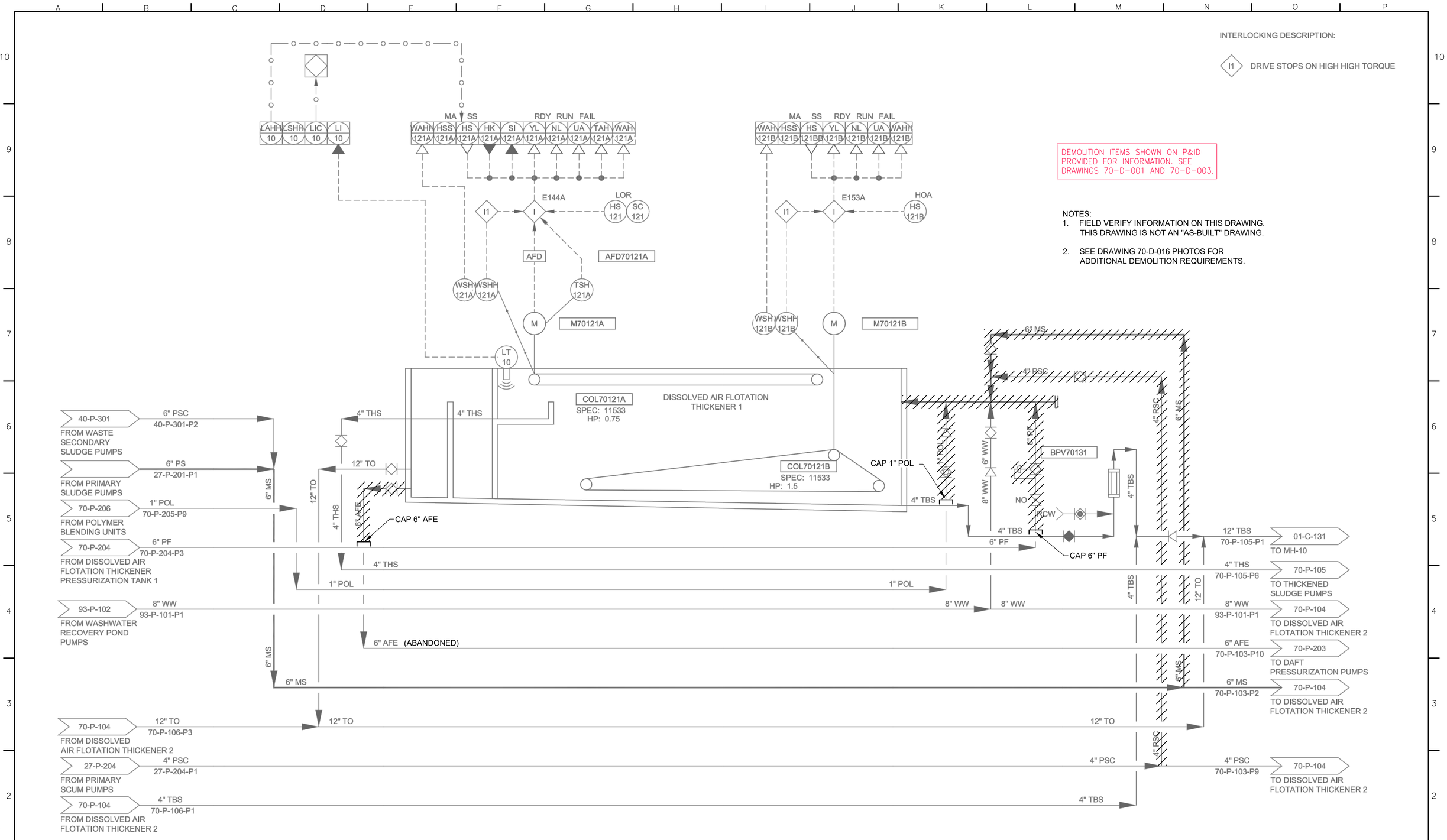
CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DEMOLITION AND MODIFICATION 7 DAFT EQUIPMENT BUILDING SECTIONS

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-D-007
SHEET NUMBER 12 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\SAF Project\592-50-22-14-70-D-007.dwg 7-17-23 08:47:39 AM sbarber



REGISTERED PROFESSIONAL ENGINEER
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CIVIL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

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SCALE : NONE
DRAWN BY : SMB
DESIGNED BY : TS
PROJ. MGR. : TRB

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1		CONFORMED TO ADDENDA	TRB	7/17/23

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CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DEMOLITION AND MODIFICATION 8 - DISSOLVED AIR FLOTATION THICKENER 1 P&ID

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-D-008
SHEET NUMBER 13 OF 89
REVISION

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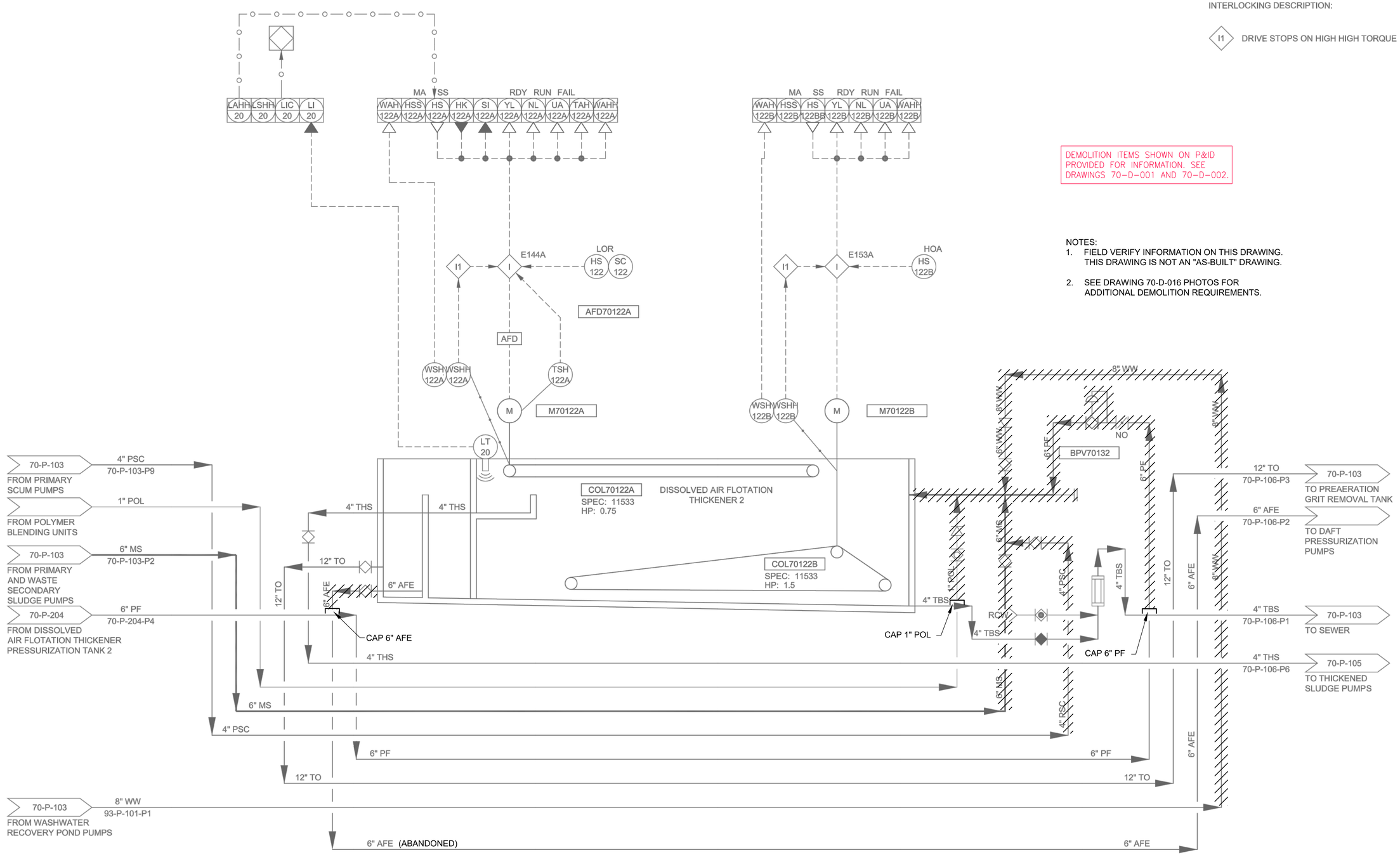
INTERLOCKING DESCRIPTION:

I1 DRIVE STOPS ON HIGH HIGH TORQUE



DEMOLITION ITEMS SHOWN ON P&ID PROVIDED FOR INFORMATION. SEE DRAWINGS 70-D-001 AND 70-D-002.

NOTES:

1. FIELD VERIFY INFORMATION ON THIS DRAWING. THIS DRAWING IS NOT AN "AS-BUILT" DRAWING.
2. SEE DRAWING 70-D-016 PHOTOS FOR ADDITIONAL DEMOLITION REQUIREMENTS.

REGISTERED PROFESSIONAL ENGINEER TIMOTHY R. BANYAI No. C60715 Exp. 12-31-24 CIVIL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

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SCALE : NONE
DRAWN BY : SMB
DESIGNED BY : TS
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
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CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS

DEMOLITION AND MODIFICATION 9 - DISSOLVED AIR FLOTATION THICKENER 2 P&ID

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-D-009
SHEET NUMBER 14 OF 89
REVISION

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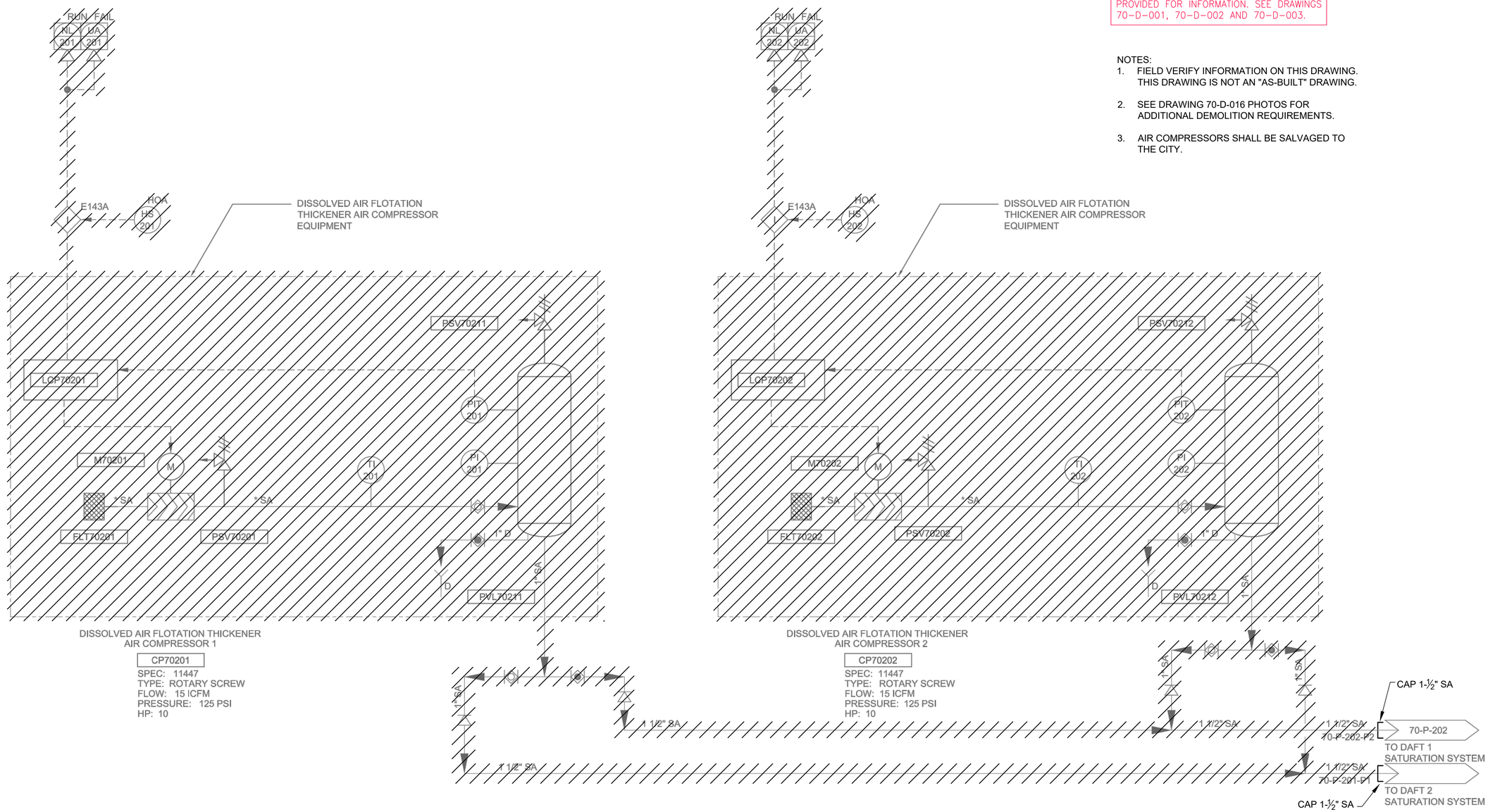
NOTE:

PIPE DIAMETERS SHALL BE DETERMINED BY COMPRESSOR MANUFACTURER FOR PIPE DESIGNATIONS PRECEDED BY AN ASTERISK (*).

DEMOLITION ITEMS SHOWN ON P&ID PROVIDED FOR INFORMATION. SEE DRAWINGS 70-D-001, 70-D-002 AND 70-D-003.

NOTES:
1. FIELD VERIFY INFORMATION ON THIS DRAWING. THIS DRAWING IS NOT AN "AS-BUILT" DRAWING.
2. SEE DRAWING 70-D-016 PHOTOS FOR ADDITIONAL DEMOLITION REQUIREMENTS.
3. AIR COMPRESSORS SHALL BE SALVAGED TO THE CITY.



DISSOLVED AIR FLOTATION THICKENER AIR COMPRESSOR 1

CP70201

SPEC: 11447
TYPE: ROTARY SCREW
FLOW: 15 ICFM
PRESSURE: 125 PSI
HP: 10

DISSOLVED AIR FLOTATION THICKENER AIR COMPRESSOR 2

CP70202

SPEC: 11447
TYPE: ROTARY SCREW
FLOW: 15 ICFM
PRESSURE: 125 PSI
HP: 10

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY R. BANYAI
No. C60715
Exp. 12-31-24
CIVIL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

THIS LINE IS 1 INCH
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SCALE : NONE
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DESIGNED BY : TS
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

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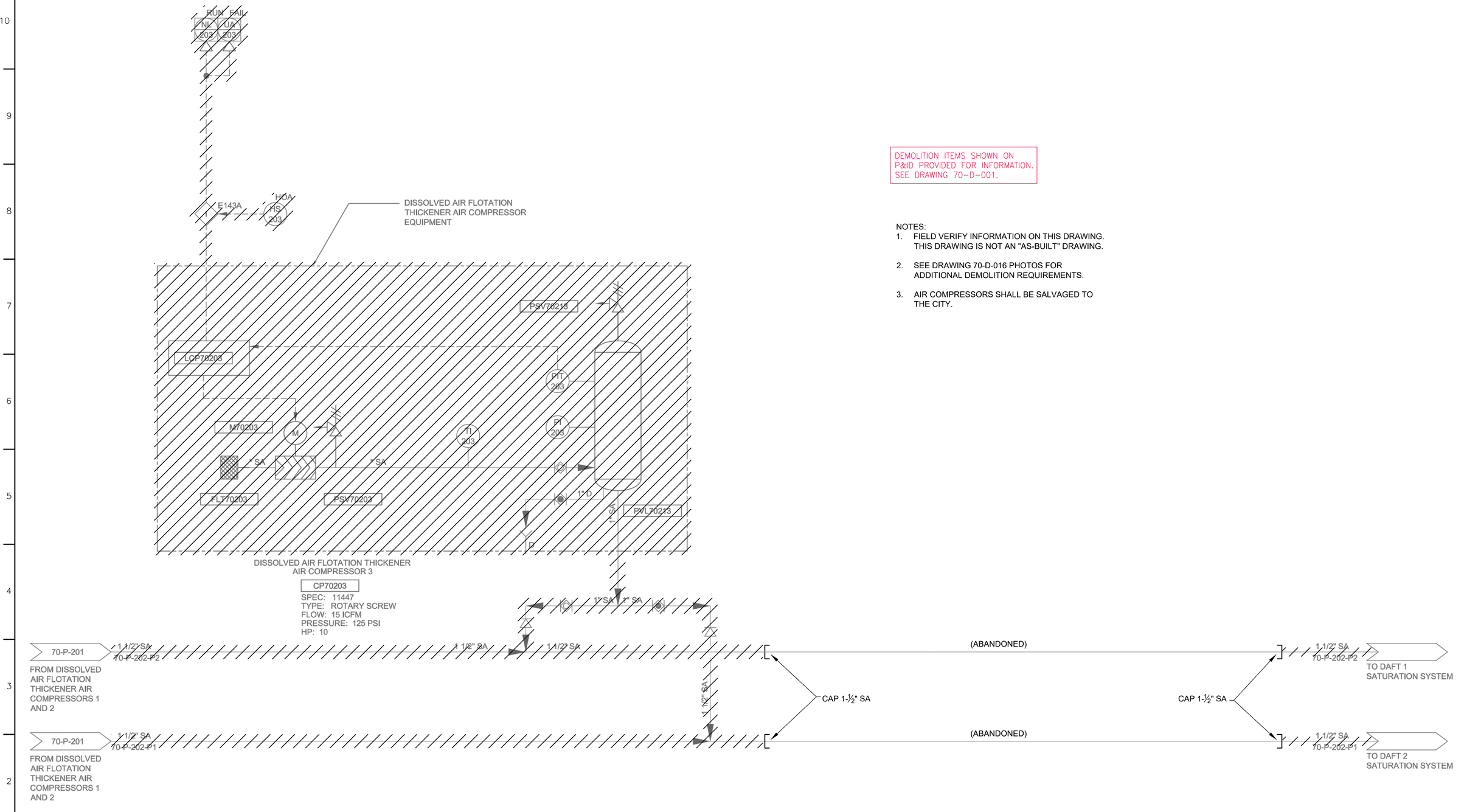
Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DEMOLITION AND MODIFICATION 10 - DAFT EQUIPMENT BUILDING DAFT AIR COMPRESSOR SYSTEM 1 OF 2 P&ID

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-D-010
SHEET NUMBER 15 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\SAF Project\592-50-22-14-70-D-010.dwg 7-17-23 08:49:56 AM sbarber



DEMOLITION ITEMS SHOWN ON P&ID PROVIDED FOR INFORMATION. SEE DRAWING 70-D-001.

NOTES:

1. FIELD VERIFY INFORMATION ON THIS DRAWING. THIS DRAWING IS NOT AN "AS-BUILT" DRAWING.
2. SEE DRAWING 70-D-016 PHOTOS FOR ADDITIONAL DEMOLITION REQUIREMENTS.
3. AIR COMPRESSORS SHALL BE SALVAGED TO THE CITY.

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY R. BANYAI
No. C60715
Exp. 12-31-24
CIVIL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

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SCALE : NONE
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DESIGNED BY : TS
PROJ. MGR. : TRB

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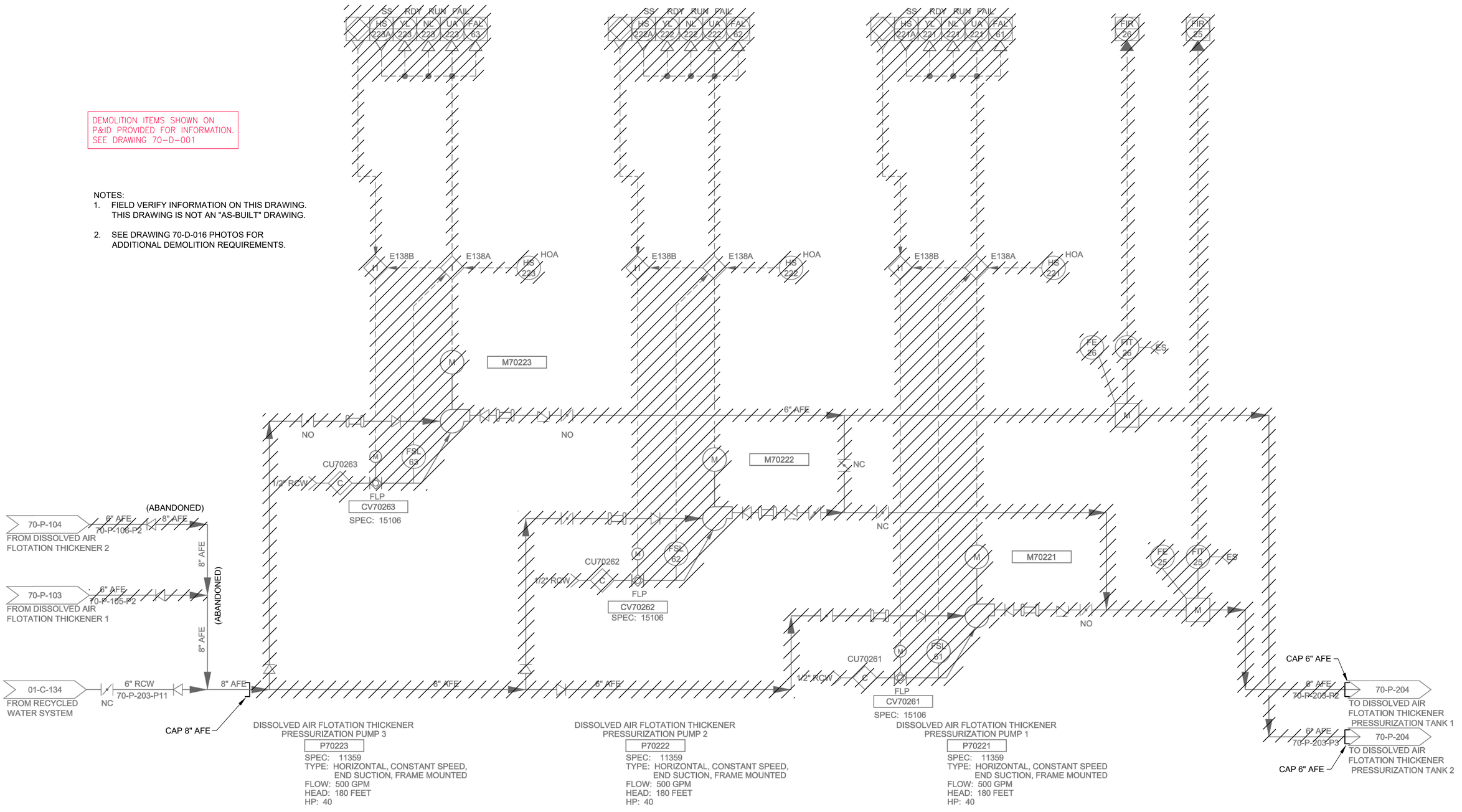
CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DEMOLITION AND MODIFICATION 11 - DAFT EQUIPMENT BUILDING DAFT AIR COMPRESSOR SYSTEM 2 OF 2 P&ID

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-D-011
SHEET NUMBER 16 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\SAF Project\592-50-22-14-70-D-011.dwg 7-17-23 08:50:28 AM sbarber

DEMOLITION ITEMS SHOWN ON P&ID PROVIDED FOR INFORMATION. SEE DRAWING 70-D-001

NOTES:
1. FIELD VERIFY INFORMATION ON THIS DRAWING. THIS DRAWING IS NOT AN "AS-BUILT" DRAWING.
2. SEE DRAWING 70-D-016 PHOTOS FOR ADDITIONAL DEMOLITION REQUIREMENTS.



REGISTERED PROFESSIONAL ENGINEER TIMOTHY R. BANYAI No. C60715 Exp. 12-31-24 CIVIL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

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SCALE : NONE
DRAWN BY : SMB
DESIGNED BY : TS
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST Water. Engineered.

Ukiah Utilities — A Department of the City of Ukiah

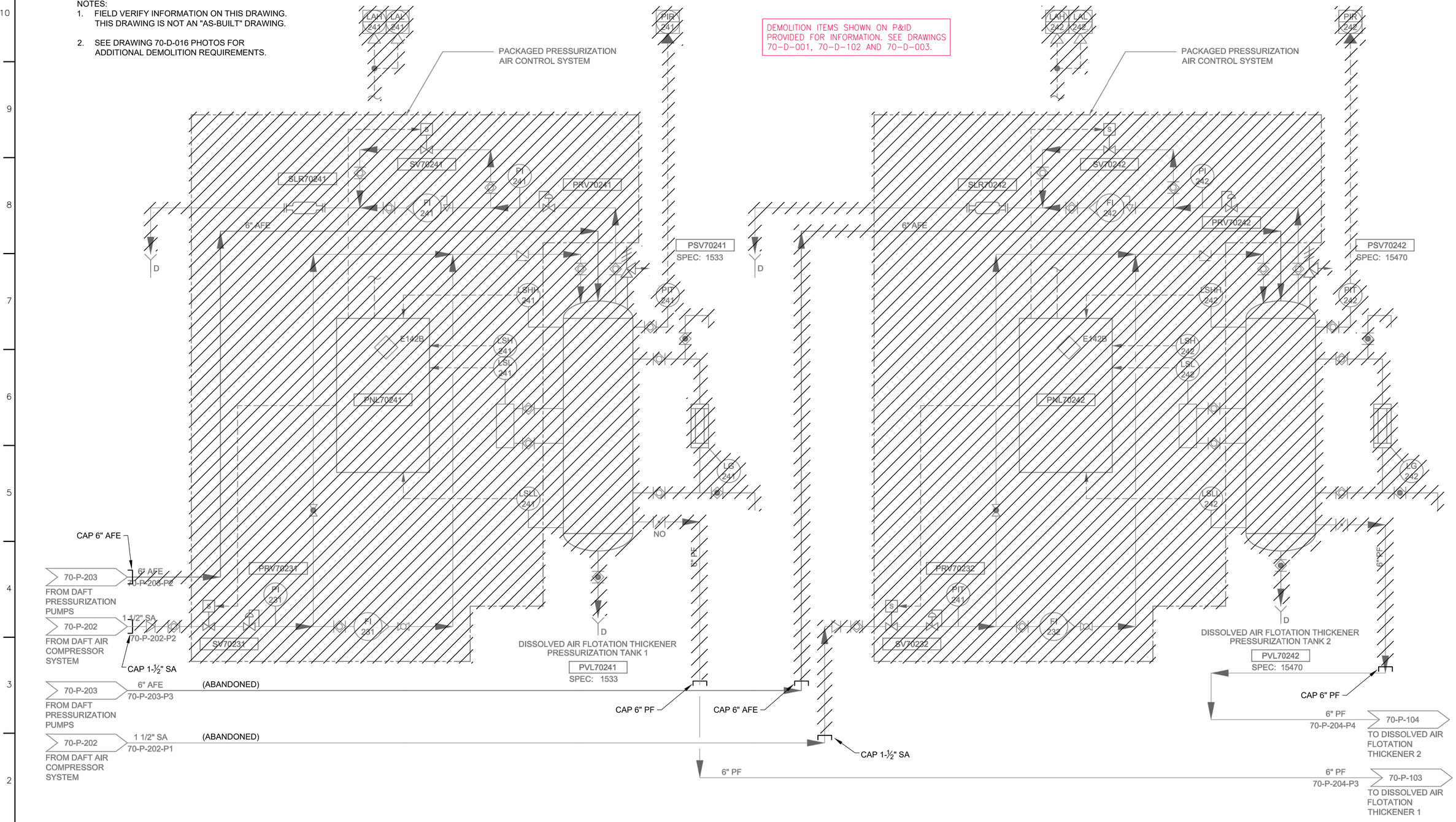
CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DEMOLITION AND MODIFICATION 12 - DAFT EQUIPMENT BUILDING DAFT AIR COMPRESSOR SYSTEM 2 OF 2 P&ID

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-D-012
SHEET NUMBER 17 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\SAF Project\592-50-22-14-70-D-012.dwg 7-17-23 08:51:02 AM sbarber

NOTES:
1. FIELD VERIFY INFORMATION ON THIS DRAWING. THIS DRAWING IS NOT AN "AS-BUILT" DRAWING.
2. SEE DRAWING 70-D-016 PHOTOS FOR ADDITIONAL DEMOLITION REQUIREMENTS.

DEMOLITION ITEMS SHOWN ON P&ID PROVIDED FOR INFORMATION. SEE DRAWINGS 70-D-001, 70-D-102 AND 70-D-003.



REGISTERED PROFESSIONAL ENGINEER
TIMOTHY R. BANYAI
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Exp. 12-31-24
CIVIL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

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IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : SMB
DESIGNED BY : TS
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

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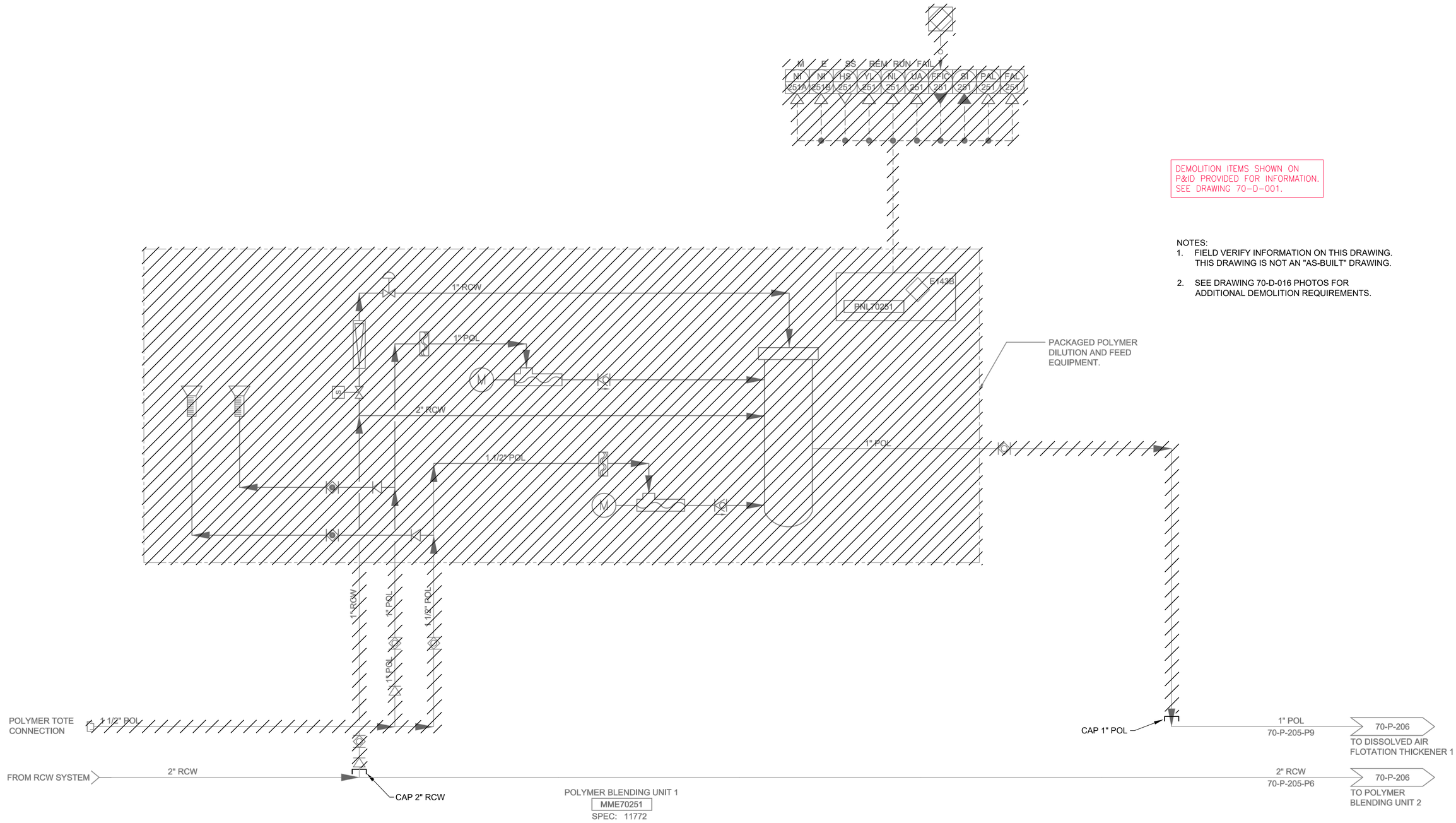
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DEMOLITION AND MODIFICATION 13 - DAFT EQUIPMENT BUILDING DAFT SATURATION SYSTEM P&ID

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-D-013
SHEET NUMBER 18 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\SAF Project\592-50-22-14-70-D-013.dwg 7-17-23 08:51:34 AM sbarber



DEMOLITION ITEMS SHOWN ON P&ID PROVIDED FOR INFORMATION. SEE DRAWING 70-D-001.

NOTES:
1. FIELD VERIFY INFORMATION ON THIS DRAWING. THIS DRAWING IS NOT AN "AS-BUILT" DRAWING.
2. SEE DRAWING 70-D-016 PHOTOS FOR ADDITIONAL DEMOLITION REQUIREMENTS.

REGISTERED PROFESSIONAL ENGINEER TIMOTHY R. BANYAI No. C60715 Exp. 12-31-24 CIVIL STATE OF CALIFORNIA

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DESIGNED BY : TS
PROJ. MGR. : TRB

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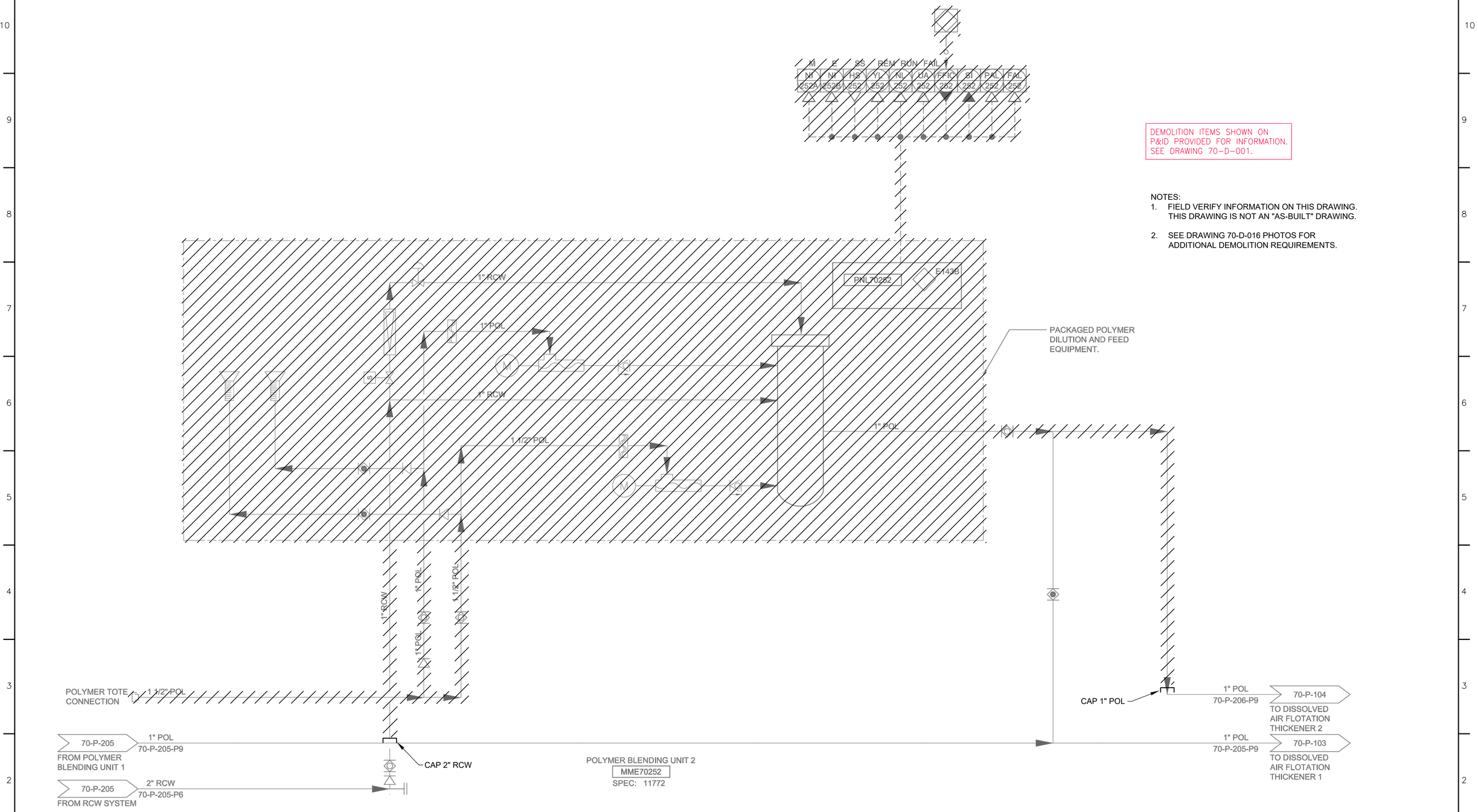
CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DEMOLITION AND MODIFICATION 14 - DAFT EQUIPMENT BUILDING POLYMER BLENDING SYSTEM 1 P&ID

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-D-014
SHEET NUMBER 19 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\SAF Project\592-50-22-14-70-D-014.dwg 7-17-23 08:52:08 AM sbarber



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REGISTERED PROFESSIONAL ENGINEER
TIMOTHY R. BANYAI
No. C60715
Exp. 12-31-24
CIVIL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

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DESIGNED BY : TS
PROJ. MGR. : TRB

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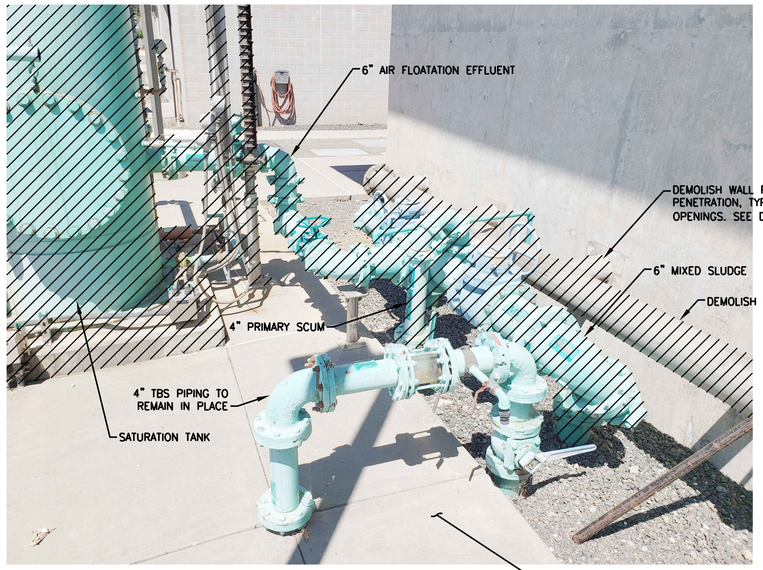
Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DEMOLITION AND MODIFICATION 15 - DAFT EQUIPMENT BUILDING POLYMER BLENDING SYSTEM 2 P&ID

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-D-015
SHEET NUMBER 20 OF 89
REVISION

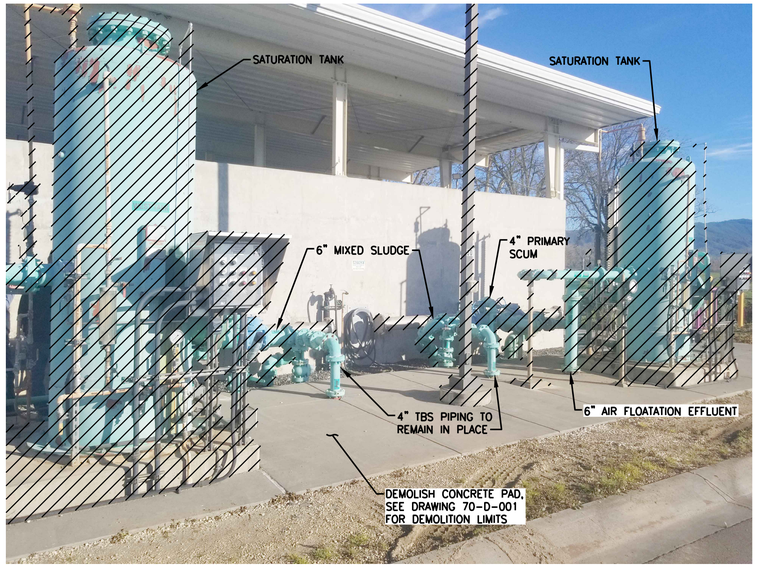
PRESSURIZATION DISCHARGE PIPE

DAFT DEMO DETAIL 1



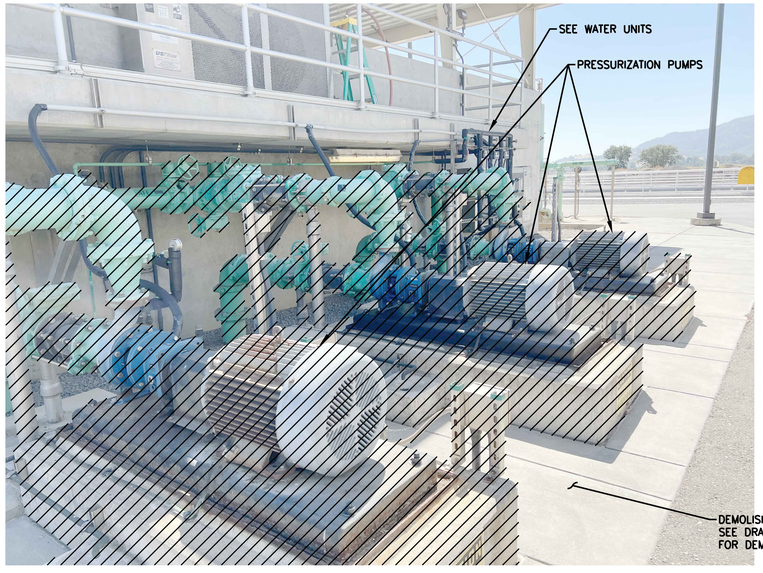
PRESSURIZATION DISCHARGE PIPE

DAFT DEMO DETAIL 2



SATURATION TANKS

DAFT DEMO DETAIL 3



PRESSURIZATION PUMPS

DAFT DEMO DETAIL 4

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY R. BANYAI
No. C60715
Exp. 12-31-24
CIVIL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

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CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS

DAFT DEMO PHOTO DETAILS

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-D-016
SHEET NUMBER 21 OF 89
REVISION

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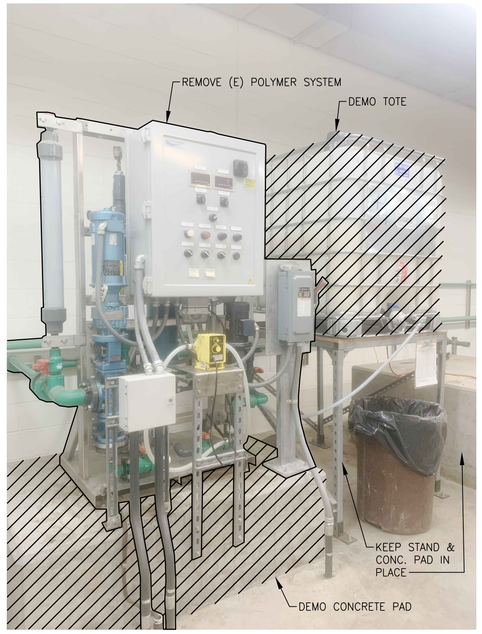
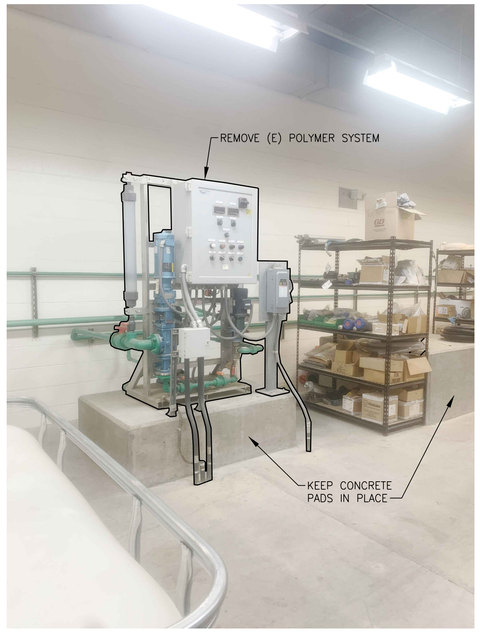
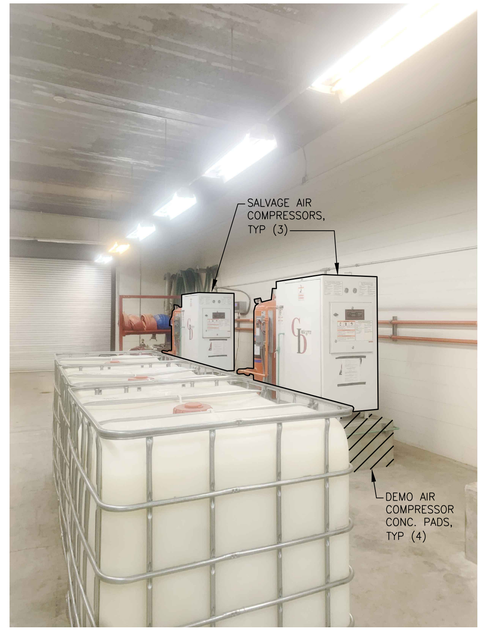


CHEM ROOM DEMO DETAIL A

CHEM ROOM DEMO DETAIL B



CHEM ROOM DEMO DETAIL C



CHEM ROOM DEMO DETAIL D

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REGISTERED PROFESSIONAL ENGINEER
TIMOTHY R. BANYAI
No. C60715
Exp. 12-31-24
CIVIL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

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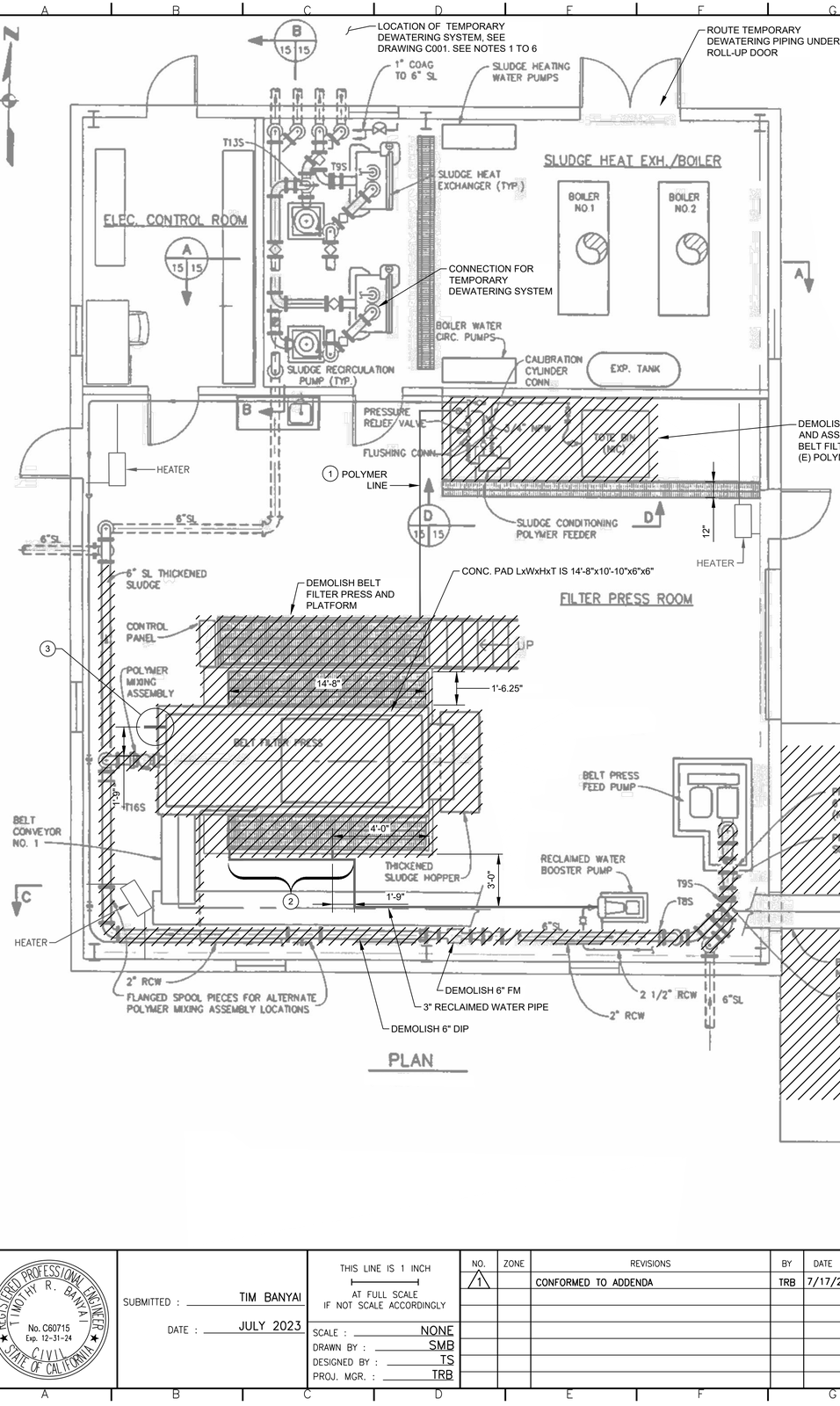
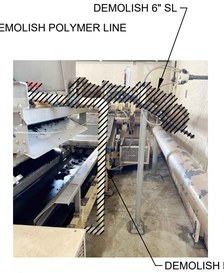
Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DAFT POLYMER ROOM
DEMO PHOTO DETAILS

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-D-017
SHEET NUMBER 22 OF 89
REVISION



1 POLYMER WATER LINE

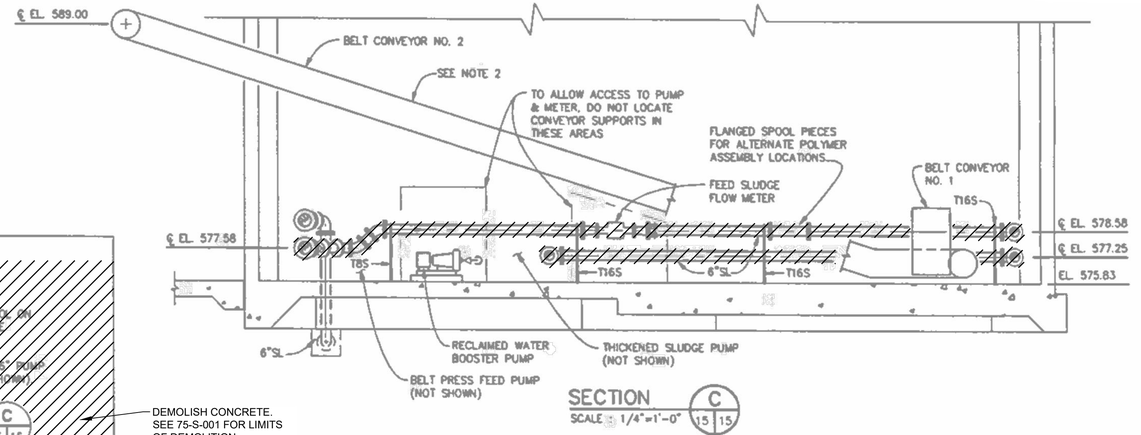


3 EXISTING BELT FILTER PRESS PIPING TO BE DEMOLISHED

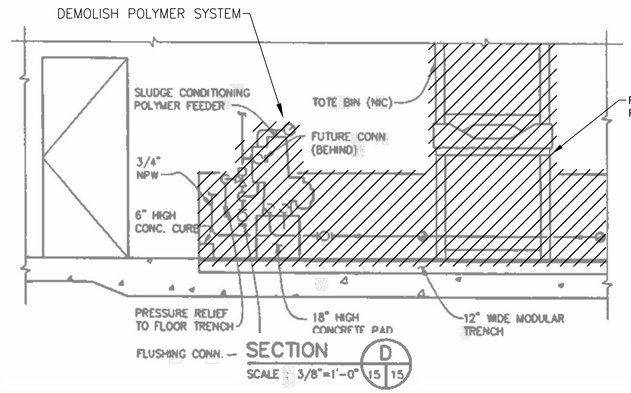
4 BELT FILTER PRESS PANEL

NOTES:

1. PROVIDE TEMPORARY DEWATERING SYSTEM DURING THE DEMOLITION OF BELT FILTER PRESS AND INSTALLATION OF THE NEW SCREW PRESS.
2. DEWATREING SYSTEM SHALL BE LOCATED NORTH OF THE SLUDGE DEWATERING SYSTEM, SEE DRAWING C001.
3. DEWATERING SYSTEM SHALL BE DESIGNED FOR 25 GPM CONTINUOUS FLOW AT 2% DIGESTED SLUDGE. A MAXIMUM OF THREE DAYS STOARGE IS AVAILABLE.
4. THE CITY WILL BE RESPONSIBLE FOR DISPOSAL OF DEWATERED SOLIDS. DEWATERED SOLIDS SHALL BE LOADED INTO A TRUCK PROVIDED BY THE CITY. THE MINIMUM PERCENT DEWATERED SOLIDS SHALL BE 16 PERCENT. THE CITY WILL DISPOSE OF DEWATERED SOLIDS LESS THAN 16 PERCENT BUT THE CONTRACTOR SHALL PAY FOR THE DIFFERENCE IN COST IF THE DEWTAERED SOLIDS WERE AT 16 PERCENT.
5. PROVIDE A PROJECT PLAN THAT INCLUDES A BIOSOLIDS SPILL RESPONSE AND PREVENTION PLAN, TRAFFIC PLAN AND SAFETY PLAN.
6. PROVIDE SPILL CONTAINMENT.
7. THE WATER FROM THE TEMPORARY DEWATERING SYSTEM MAY BE DISPOSED OF IN A DRAIN LOCATED IN THE BOILER ROOM.



SECTION C
SCALE : 1/4"=1'-0" (15 15)



SECTION D
SCALE : 3/8"=1'-0" (15 15)

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY R. BANYAI
No. C60715
Exp. 12-31-24
CIVIL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

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PROJ. MGR. : TRB

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Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
SLUDGE DEWATERING BUILDING PLAN AND SECTIONS

JOB NUMBER 592-50-22-14
DRAWING NUMBER 75-D-001
SHEET NUMBER 23 OF 89
REVISION

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BELT PRESS DEMO DETAIL A

BELT PRESS DEMO DETAIL B

BELT PRESS DEMO DETAIL C

BELT PRESS DEMO DETAIL D

BELT PRESS DEMO DETAIL E

NOTE:
1. CUT ALL ANCHOR BOLTS FLUSH WITH CONCRETE. APPLY CORROSION INHIBITOR (Sika FerroGuard 908, OR EQUAL) AND COAT ENTIRE SURFACE WITH EPOXY COATING.

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY R. BANYAI
No. C60715
Exp. 12-31-24
CIVIL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

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PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

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Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
BELT PRESS DEMO PHOTO DETAILS

JOB NUMBER 592-50-22-14
DRAWING NUMBER 75-D-003
SHEET NUMBER 24 OF 89
REVISION

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STRUCTURAL NOTES

GENERAL

1. ALL STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE CIVIL, ARCHITECTURAL, MECHANICAL, ELECTRICAL, AND SHOP DRAWINGS AND THE PROJECT SPECIFICATIONS (IF ANY).
2. CONSTRUCTION SHALL MEET THE REQUIREMENTS OF THE 2022 CALIFORNIA BUILDING CODE (CBC). THE CBC SHALL GOVERN EXCEPT WHERE OTHER APPLICABLE CODES OR THESE DOCUMENTS ARE MORE RESTRICTIVE.
3. NOTHING SHOWN OR OMITTED FROM THESE DOCUMENTS SHALL RELIEVE THE CONTRACTOR FROM FULL COMPLIANCE WITH ALL APPLICABLE CODES AND ORDINANCES.
4. THE CONTRACTOR ALONE IS RESPONSIBLE FOR JOB SITE SAFETY. SITE REVIEW OF THE CONSTRUCTION BY THE ENGINEER IS TO DETERMINE CONFORMANCE WITH THE PLANS AND SPECIFICATIONS. IT DOES NOT ENCOMPASS SAFETY PROCEDURES OR OPERATIONS.
5. WITHOUT EXCLUSION OF ANY REFERENCE IN THE CONSTRUCTION DOCUMENTS TO ANY RULE OR REGULATION, THE ENGINEER IS NOT ASSUMING ANY PROVISIONS OF SUPERVISION OF CONSTRUCTION METHODS OR PROCESSES.
6. STRUCTURES HAVE BEEN DESIGNED FOR OPERATIONAL LOADS ON THE COMPLETED STRUCTURES. DURING CONSTRUCTION, BRACING OR SHORING SHALL SUPPORT STRUCTURES WHEREVER EXCESSIVE CONSTRUCTION LOADS MAY OCCUR.
7. SEE ALL OTHER PROJECT DOCUMENTS FOR REGLETS, PIPE SLEEVES, CONDUITS AND OTHER ITEMS TO BE EMBEDDED OR PASSED THROUGH THE CONCRETE.
8. PENETRATIONS THROUGH WALLS OR SLABS LESS THAN 12 INCHES IN DIAMETER MAY NOT BE SHOWN ON THE STRUCTURAL DRAWINGS. REFER TO ASSOCIATED DRAWINGS FOR LOCATIONS.
9. THE MINIMUM CLEAR DISTANCE BETWEEN PIPE AND CONDUIT PENETRATIONS SHALL BE 3 TIMES THE DIAMETER OF THE PENETRATION OR 8 INCHES, WHICHEVER IS SMALLER.
10. WRITTEN DIMENSIONS SHALL BE USED FOR CONSTRUCTION. DO NOT SCALE DRAWINGS.
11. STRUCTURAL DIMENSIONS CONTROLLED BY OR RELATED TO MECHANICAL AND/OR ELECTRICAL EQUIPMENT SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION.
12. MECHANICAL AND ELECTRICAL EQUIPMENT SUPPORTS, ANCHORAGES, OPENINGS, RECESSES AND EMBEDMENTS NOT SHOWN ON THE DRAWINGS SHALL BE PROVIDED BY THE CONTRACTOR PRIOR TO PLACING CONCRETE.
13. DIMENSIONS INDICATED WITH AN * SHALL BE COORDINATED WITH MECHANICAL AND/OR ELECTRICAL DRAWINGS AND EQUIPMENT SUPPLIED.
14. ALL DIMENSIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR. SHOULD CONFLICTS OR INTERFERENCE OCCUR, THEY SHALL BE RESOLVED WITH THE ENGINEER AT NO ADDITIONAL COST TO THE OWNER. EXISTING FIELD CONDITIONS AT VARIANCE WITH THE PLANS SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE ANY WORK IS PERFORMED.
15. USE PERTINENT STANDARD DETAILS SHOWN, EVEN THOUGH THEY MAY NOT BE CALLED OUT AT LOCATIONS WHERE THEY APPLY.
16. CONDITIONS NOT SPECIFICALLY SHOWN OR INDICATED SHALL BE CONSTRUCTED SIMILAR TO DETAILS SHOWN FOR THE RESPECTIVE MATERIALS OR CONDITIONS.

DEFERRED SUBMITTALS

1. THE FOLLOWING PORTIONS OF THE PROJECT ARE DEFERRED SUBMITTAL ITEMS. DEFERRED SUBMITTALS LISTED BELOW ARE THE RESPONSIBILITY OF THE CONTRACTOR. DEFERRED SUBMITTAL ITEMS HAVE NOT BEEN DESIGNED BY THE ENGINEER OF RECORD. REFER TO CONTRACT DOCUMENTS FOR ADDITIONAL INFORMATION.
   a) FRP GRATING PLATFORM SYSTEMS
   b) MECHANICAL EQUIPMENT STANCHIONS/RAILS
   c) SHIPPING CONTAINER
2. UNLESS OTHERWISE NOTED, DEFERRED SUBMITTAL ITEMS SHALL BE STAMPED AND SIGNED BY A PROFESSIONAL CIVIL OR STRUCTURAL ENGINEER REGISTERED IN THE STATE OF CALIFORNIA.
3. DEFERRED SUBMITTAL ITEMS SHALL BE SUBMITTED TO THE OWNER FOR APPROVAL DURING THE CONSTRUCTION PHASE OF THE PROJECT.
4. DEFERRED SUBMITTAL ITEMS SHALL NOT BE FABRICATED UNTIL THE ENGINEER OF RECORD HAS REVIEWED THE SUBMITTAL DOCUMENTS AND INDICATED THAT THEY HAVE BEEN REVIEWED AND THAT THEY HAVE BEEN FOUND TO BE IN GENERAL CONFORMANCE WITH THE CONTRACT DOCUMENTS.
5. DEFERRED SUBMITTAL ITEMS SHALL NOT BE FABRICATED UNTIL THEIR DESIGN AND SUBMITTAL DOCUMENTS HAVE BEEN FAVORABLY REVIEWED BY THE OWNER.

DESIGN LOADS

1. LIVE LOADS:

USE OR OCCUPANCY	UNIFORM LOAD (psf)	CONCENTRATED LOAD (lbs)
EQUIPMENT FLOOR AREAS	100	300
EQUIPMENT ROOM FLOORS	250	-
CATWALKS FOR MAINTENANCE ACCESS	100	-

2. WIND:

BASIC WIND SPEED V_{ult} (3-SECOND GUST):	99 MPH
RISK CATEGORY:	III
WIND EXPOSURE CATEGORY:	C

3. SEISMIC:

SEISMIC IMPORTANCE FACTOR (I_E)	1.0
RISK CATEGORY:	III
MAPPED SPECTRAL RESPONSE ACCELERATIONS:	S_S = 1.865g, S_1 = 0.712g
SITE CLASS	D
SPECTRAL RESPONSE COEFFICIENTS:	S_{DS} = 1.492g, S_{D1} = 0.807g
SEISMIC DESIGN CATEGORY:	E
DESIGN BASE SHEAR:	V = 0.47 W
SEISMIC RESPONSE COEFFICIENT:	C_S = 0.47
RESPONSE MODIFICATION FACTOR:	R = 2.5
ANALYSIS PROCEDURE USED:	ASCE 7, CHAPTER 13

4. SNOW:

GROUND SNOW LOAD (P_g):	16 PSF
FLAT-ROOF SNOW LOAD (P_f):	15 PSF
SNOW EXPOSURE FACTOR (C_e):	0.9
SNOW LOAD IMPORTANCE FACTOR (I_s):	1.1
THERMAL FACTOR (C_t):	1.2

SOIL PARAMETERS

1. ALLOWABLE SOIL BEARING CAPACITY:

FOUNDATION TYPE	ALLOWABLE BEARING CAPACITY (1) FOR DL + LL
MAT FOUNDATION	1,000 psf

(1) ALLOWABLE BEARING VALUES MAY BE INCREASED BY 1/3 FOR LOAD CASES INCLUDING WIND AND/OR SEISMIC.
(2) PRESUMPTIVE LOAD BEARING VALUES, CBC TABLE 1806.2; USCS "CL".

2. LATERAL EARTH PRESSURES:

SOIL CONDITION	AT REST (1) (pcf)		ACTIVE (1) (pcf)		PASSIVE (1) (pcf)	
	w/o GW (2)	w/ GW (2)	w/o GW (2)	w/ GW (2)	w/o GW (2)	w/ GW (2)
CLASS 2 AGG. BASE	55	93	35	83	300	210
USCS "CL" MATERIAL	100	145	-	-	100	70

(1) EQUIVALENT FLUID DENSITY
(2) GROUNDWATER (GW) TABLE AT GRADE.

3. COEFFICIENT OF FRICTION:

   A COEFFICIENT OF SLIDING FRICTION OF 0.25 MAY BE ADDED TO PASSIVE RESISTANCE.

SPECIAL INSPECTION

1. SPECIAL INSPECTION SHALL BE CONDUCTED IN ACCORDANCE WITH THE REQUIREMENTS SET FORTH IN CHAPTER 17 OF THE CBC. UNLESS OTHERWISE NOTED IN THE PROJECT SPECIFICATIONS, SPECIAL INSPECTION SHALL BE PROVIDED BY AND PAID FOR BY THE DISTRICT. THE FOLLOWING ITEMS, AS A MINIMUM, SHALL RECEIVE SPECIAL INSPECTION:

ITEM	CONCRETE INSPECTIONS AND VERIFICATION	FREQUENCY	
		CONTINUOUS	PERIODIC
1.	INSPECTION OF REINFORCING STEEL, INCLUDING PRESTRESSING TENDONS, AND PLACEMENT.		X
2.	INSPECTION OF REINFORCING STEEL WELDING IN ACCORDANCE WITH TABLE 1705.3, ITEM 2.	X	
3.	INSPECTION OF ANCHORS CAST IN CONCRETE WHERE ALLOWABLE LOADS HAVE BEEN INCREASED OR WHERE STRENGTH DESIGN IS USED.		X
4.	INSPECTION OF ANCHORS POST-INSTALLED IN HARDENED CONCRETE MEMBERS.	X	
5.	VERIFYING USE OF REQUIRED DESIGN MIX.		X
6.	AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATE SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	X	
7.	INSPECTION OF CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES.	X	
8.	INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.		X
9.	INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED.		X
	SPECIAL PROVISIONS FOR SEISMIC RESISTANCE		
10.	TEST ASTM A 615 REINFORCING STEEL THAT IS TO BE WELDED, CHEMICAL TESTS SHALL BE PERFORMED TO DETERMINE WELDABILITY IN ACCORDANCE WITH SECTION 26.6.4.1 OF ACI 318.		X

ITEM	FOUNDATION INSPECTIONS AND VERIFICATION	FREQUENCY	
		CONTINUOUS	PERIODIC
	SOILS		
1.	VERIFY SUBGRADE MATERIALS BELOW THE FOOTING FOR DESIGN BEARING CAPACITY.		X
2.	VERIFY DEPTH OF EXCAVATION AND TYPE OF SUBGRADE MATERIALS REACHED.		X
3.	PERFORM CLASSIFICATION AND COMPACTION TESTING OF CONTROLLED BACKFILL MATERIALS.		X
4.	VERIFY MATERIALS USED, LAYERED THICKNESSES AND COMPACTION OF BACK FILLS.	X	
5.	VERIFY THE SUBGRADE AND SITE PREPARATIONS FOR CONTROLLED FILL.		X

ITEM	INSPECTIONS AND VERIFICATION FOR SEISMIC RESISTANCE IN OTHER BUILDING SYSTEMS	FREQUENCY	
		CONTINUOUS	PERIODIC
	MECHANICAL & ELECTRICAL COMPONENTS		
1.	PIPING SYSTEMS INTENDED TO CARRY FLAMMABLE, COMBUSTIBLE OR HIGHLY TOXIC CONTENTS AND THEIR ASSOCIATED MECHANICAL UNITS IN STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY C, D, E OR F.		X

NOTATION:

"X" DENOTES EITHER CONTINUOUS OR PERIODIC INSPECTIONS.
"---" DENOTES AN ACTIVITY THAT IS EITHER A ONE TIME ACTIVITY OR ONE WHOSE FREQUENCY IS DEFINED IN SOME OTHER MANNER

DEFINITIONS:
CONTINUOUS - SPECIAL INSPECTION BY THE SPECIAL INSPECTOR WHO IS PRESENT WHEN AND WHERE THE WORK TO BE INSPECTED IS BEING PERFORMED (CBC, SECTION 202)

PERIODIC - SPECIAL INSPECTION BY THE SPECIAL INSPECTOR WHO IS INTERMITTENTLY PRESENT WHERE THE WORK TO BE INSPECTED IS BEING PERFORMED (CBC, SECTION 202)

SPECIAL INSPECTOR - A QUALIFIED PERSON EMPLOYED OR RETAINED BY THE OWNER AND APPROVED BY THE AUTHORITY HAVING JURISDICTION AS HAVING THE COMPETENCE NECESSARY TO INSPECT A PARTICULAR TYPE OF CONSTRUCTION REQUIRING SPECIAL INSPECTION.

REGISTERED PROFESSIONAL ENGINEER
TERENCE J. CAVANAH
No. S 3107
Exp. 12/31/23
STRUCTURAL
STATE OF CALIFORNIA

SUBMITTED : _____
DATE : _____

THIS LINE IS 1 INCH
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DESIGNED BY : CFW
PROJ. MGR. : TJC

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2		CONFORMED TO ADDENDA	CFW	7/25/23
1		ADDENDUM 3	CFW	5/2/23

WEST YOST
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
STRUCTURAL GENERAL NOTES I

JOB NUMBER 592-50-22-14
DRAWING NUMBER 00-S-001
SHEET NUMBER 25 OF 89
REVISION

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CONDUITS AND PIPES EMBEDDED IN CONCRETE

1. CONDUIT, PIPES, AND SLEEVES OF ANY MATERIAL NOT HARMFUL TO CONCRETE AND WITHIN LIMITATIONS OF THE PROJECT DRAWINGS AND SPECIFICATIONS, AND ACI 318 MAY BE PERMITTED TO BE EMBEDDED IN CONCRETE SUBJECT TO PRIOR APPROVAL BY THE ENGINEER OF RECORD, PROVIDED THEY ARE NOT CONSIDERED, BY THE ENGINEER OF RECORD, TO DISPLACE STRUCTURAL CONCRETE, EXCEPT AS PROVIDED HEREIN.
2. CONDUITS AND PIPES OF ALUMINUM SHALL NOT BE EMBEDDED IN STRUCTURAL CONCRETE.
3. CONDUITS AND PIPES, WITH THEIR FITTINGS, EMBEDDED WITHIN A COLUMN SHALL NOT DISPLACE MORE THAN 4-PERCENT OF THE AREA OF THE CROSS SECTION ON WHICH THE STRENGTH IS CALCULATED OR WHICH IS REQUIRED FOR FIRE PROTECTION. THE ENGINEER OF RECORD SHALL DETERMINE IF THE STRENGTH OF THE CONSTRUCTION HAS BEEN SIGNIFICANTLY IMPAIRED.
4. CONDUITS AND PIPES EMBEDDED WITHIN A SLAB, WALL, OR BEAM SHALL SATISFY THE FOLLOWING:
   a) THEY SHALL NOT BE LARGER IN OUTSIDE DIAMETER THAN 1/3 THE OVERALL THICKNESS OF SLAB, WALL, OR BEAM IN WHICH THEY ARE EMBEDDED.
   b) MINIMUM CENTER-TO-CENTER SPACING BETWEEN CONDUIT AND/OR PIPING RUNS SHALL BE 3 TIMES OUTSIDE DIAMETER OR WIDTH.
   c) THEY SHALL BE LOCATED IN SUCH A MANNER AS TO MAINTAIN A MINIMUM OF 1-INCH CLEAR SPACE BETWEEN THE EMBEDDED ITEM AND PRIMARY REINFORCEMENT.
   d) THEY SHALL NOT SIGNIFICANTLY IMPAIR THE STRENGTH OF THE CONSTRUCTION. THE ENGINEER OF RECORD SHALL DETERMINE IF THE STRENGTH OF THE CONSTRUCTION HAS BEEN SIGNIFICANTLY IMPAIRED.
5. NO LIQUIDS, GAS, OR VAPOR, EXCEPT WATER NOT EXCEEDING 90 DEGREES FAHRENHEIT NOR 50 PSI, SHALL BE PLACED IN THE PIPES UNTIL THE CONCRETE HAS ATTAINED ITS DESIGN STRENGTH.
6. IN SOLID SLABS, CONDUITS AND/OR PIPING SHALL BE PLACED BETWEEN THE TOP AND BOTTOM REINFORCEMENT AT THE CENTERLINE OF THE SLAB. AT A MINIMUM, THEY SHALL BE LOCATED IN SUCH A MANNER AS TO MAINTAIN A MINIMUM OF 1-INCH CLEAR SPACE BETWEEN THE EMBEDDED ITEM AND PRIMARY REINFORCEMENT.
7. CONCRETE COVER FOR PIPES, CONDUITS, AND FITTINGS SHALL NOT BE LESS THAN 2-INCHES FOR CONCRETE EXPOSED TO EARTH, CONTAINED LIQUIDS, OR WEATHER, NOR LESS THAN 1-INCH FOR CONCRETE NOT EXPOSED TO CONTAINED LIQUIDS, WEATHER OR IN CONTACT WITH GROUND.
8. ADDITIONAL REINFORCEMENT WITH AN AREA NOT LESS THAN 0.002 TIMES THE AREA OF CONCRETE SECTION SHALL BE PROVIDED NORMAL TO THE CONDUIT AND/OR PIPING.
9. CONDUITS AND/OR PIPING SHALL BE SO FABRICATED AND INSTALLED THAT CUTTING, BENDING, OR DISPLACEMENT OF PRIMARY REINFORCEMENT FROM ITS PROPER LOCATION WILL NOT BE REQUIRED.
10. PIPES PASSING THROUGH WALLS OF A LIQUID - CONTAINING STRUCTURE SHALL INCLUDE AN INTEGRAL WATERSTOP.

SITE WORK

1. A GEOTECHNICAL REPORT WAS NOT AVAILABLE FOR THIS PROJECT. SOIL DESIGN PARAMETERS ARE BASED ON VALUES PRESENTED IN CHAPTER 18 OF THE CBC FOR A CLASS 3 (3, 4, OR 5) MATERIAL.
2. EXCAVATION FOR PADS AS SHOWN ON THE DRAWINGS:
   THE BOTTOMS OF ALL EXCAVATIONS SHALL BE LEVEL, TAMPED FIRM, CLEAN AND FREE FROM ALL DEBRIS OR FOREIGN MATTER.
3. OVER-EXCAVATION SHALL EXTEND LATERALLY BEYOND THE OUTSIDE EDGE OF FOOTINGS BY A MINIMUM OF 1/2 THE DEPTH OF OVER-EXCAVATION BELOW THE FOOTING OR 12-INCHES.
4. WHERE PRACTICABLE, SIDES OF FOOTINGS SHALL BE CUT NEAT AND CONCRETE POURED DIRECTLY AGAINST THE EXCAVATION. IF FORMING IS REQUIRED, THE TRENCHES SHALL BE EXCAVATED WIDE ENOUGH TO PERMIT THE ERECTION AND REMOVAL OF FORMS.
5. THE BOTTOM OF ALL EXCAVATIONS SHALL BE SCARIFIED TO A DEPTH OF 8 INCHES, MOISTURE CONDITIONED TO WITHIN 5 PERCENT (±1 PERCENT) OVER THE OPTIMUM MOISTURE CONTENT, AND COMPACTED TO A LEAST 89 PERCENT (±1 PERCENT) RELATIVE COMPACTION.
6. CLASS 2 AGGREGATE BASEROCK SHALL CONSIST OF MATERIAL FREE FROM DEBRIS AND ORGANIC OR OTHER DELETERIOUS MATERIALS. BACKFILL MATERIAL SHALL BE PLACED IN 8-INCH LAYERS, LEVELED, RAMMED AND TAMPED IN PLACE. COMPACTION OF ALL LAYERS SHALL BE A MINIMUM OF 95 PERCENT MAXIMUM DRY DENSITY IN ACCORDANCE WITH ASTM D1557.

CONCRETE

1. REINFORCED CONCRETE SHALL CONFORM TO ACI 318.
2. PORTLAND CEMENT SHALL CONFORM TO ASTM C150 TYPE II. ONE BRAND OF CEMENT SHALL BE USED THROUGHOUT THE WORK.
3. USE OF UP TO 25% POZZOLAN (FLY, ASH, CLASS F) CONTENT OF TOTAL CEMENTITIOUS MATERIAL IS PERMITTED.
4. USE OF GRANULATED GROUND BLAST FURACE SLAG (GGBFS) IN THE CONCRETE IS NOT PERMISSIBLE.
5. ALL AGGREGATES SHALL CONFORM TO ASTM C33. THE MAXIMUM SIZE AGGREGATE SHALL BE 1 INCH. USE OF RECYCLED CONCRETE, AGGREGATE OR OTHER RECYCLABLE MATERIALS IS NOT PERMISSIBLE.
6. CONCRETE COMPRESSIVE STRENGTH SHALL MEET THE MINIMUM REQUIREMENTS LISTED BELOW.

LOCATION	MIN 28 DAY STRENGTH (psi)
STRUCTURAL CONCRETE	4,000
CONCRETE FILL	2,500

7. ADDITIONAL BENEFITS OF INCREASED COHESION, IMPROVED COMPACTION, REDUCED SCALING AND ENHANCED LONG TERM QUALITY AND DURABILITY, ALL CONCRETE SHALL HAVE AIR CONTENT (ENTRAPPED + ENTRAINED) OF 5.0 - 7.0 PERCENT.
8. CONSTRUCTION JOINTS SHALL NOT BE PLACED AT LOCATIONS OTHER THAN THOSE SHOWN ON THE DRAWINGS WITHOUT THE PRIOR APPROVAL OF THE ENGINEER OF RECORD.
9. ALL EXPOSED CORNERS OF CONCRETE SHALL HAVE 3/4" MINIMUM CHAMFER, UNLESS NOTED OTHERWISE.

CONCRETE FINISHING, CURING AND PATCHING

1. AS SOON AS CONCRETE IN SLABS HAS SET SUFFICIENTLY TO BE WORKABLE, IT SHALL BE HAND FLOATED WITH A WOOD FLOAT. FINAL TROWELING OF THE INTERIOR SLABS AND WALL PANELS SHALL BE DONE WITH A STEEL TROWEL EXCEPT WHERE DRAWINGS SPECIFICALLY CALL FOR ANOTHER TYPE OF FINISH. ALL EXTERIOR SLABS, INCLUDING SIDEWALKS, SHALL BE GIVEN A LIGHT BROOM NON-SLIP FINISH UNLESS OTHERWISE NOTED ON THE DRAWINGS.
2. FINISHED SURFACES OF ALL SLABS AND PANELS SHALL BE TRUE AND FLAT IN ACCORDANCE WITH ELEVATIONS AND SLOPES SHOWN ON THE DRAWINGS. THE MAXIMUM VARIATION ALLOWED FROM THE SPECIFIED SLOPES AND SURFACES SHALL BE 1/8 INCH WITH NOT MORE THAN 1/8-INCH VARIATION IN ANY 10-FOOT LENGTH.
3. CONCRETE SLABS AND PANELS SHALL BE CURED BY MEANS OF AN APPROVED CURING COMPOUND APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
4. EDGE FORMS 8 INCHES OR LESS IN HEIGHT AT SLABS AND PANELS SHALL REMAIN IN PLACE 24 HOURS AFTER PLACEMENT. AT CAST-IN-PLACE WALLS, BEAMS AND COLUMNS, FORMS SHALL NOT BE REMOVED UNTIL CONCRETE HAS SET ADEQUATELY TO PREVENT DAMAGE DURING AND AFTER REMOVAL.
5. IMMEDIATELY AFTER FORM REMOVAL, FORM TIES SHALL BE REMOVED FROM EXPOSED SURFACES AND HOLES AND OTHER VOIDS SHALL BE POINTED FLUSH WITH MORTAR COMPOSED OF ONE PART PORTLAND CEMENT AND TWO PARTS SAND. FINS, BURRS, ETC. SHALL BE REMOVED WHILE THE CONCRETE IS STILL GREEN. VOIDS, POCKETS, AND HONEYCOMBS WHICH WOULD EITHER WEAKEN CONCRETE OR DISFIGURE EXPOSED SURFACES SHALL BE SIMILARLY PATCHED. IF, IN THE ENGINEER'S OPINION, HONEYCOMBING IS SUCH THAT THE STRENGTH OF THE STRUCTURE IS IMPAIRED, WHOLE SECTIONS OF THE WORK MAY BE REQUIRED BY THE ENGINEER TO BE REMOVED AND REPLACED AS DIRECTED, AT THE CONTRACTOR'S EXPENSE.
6. GROUT TOPPING SHALL BE TWO COMPONENT POLYMER-MODIFIED, PORTLAND CEMENT, FAST SETTING TROWEL-GRADE MORTAR WITH MIGRATING CORROSION INHIBITOR.

CONCRETE REINFORCING

1. REINFORCING STEEL SHALL CONFORM TO THE LATEST EDITION OF ASTM SPECIFICATION A706 OR A615, GRADE 60.
2. REINFORCING STEEL FABRICATION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF CRSI MANUAL OF STANDARD PRACTICE.
3. REINFORCING SHALL HAVE THE FOLLOWING CLEAR CONCRETE COVER, UNLESS OTHERWISE NOTED ON THE DRAWINGS.

CONDITION	COVER (INCHES)
UNFORMED SURFACES IN CONTACT WITH EARTH	3
FORMED SURFACES EXPOSED TO EARTH, WATER AND/OR WEATHER	2
BOTTOM SURFACES FOR SLAB OVER WATER	2
CONCRETE SURFACES FOR DRY CONDITIONS	
- WALLS, SLABS AND JOISTS	1 1/2
- BEAMS AND COLUMNS:	
- PRIMARY REINFORCING	2
- STIRRUPS, SPIRALS AND TIES	1 1/2

4. SPLICED BARS SHALL HAVE A MINIMUM CLASS B CONTACT LAP AS SPECIFIED IN THE LATEST EDITION OF ACI 315 DETAILING MANUAL AND ACI 318 UNLESS OTHERWISE NOTED ON THE DRAWINGS. WHERE SHOWN ON THE DRAWINGS, ld = DEVELOPMENT LENGTH AS DEFINED IN THE STANDARD DETAILS OF THESE DRAWINGS. HOOKS OF REINFORCING STEEL SHALL COMPLY WITH ACI 318.
5. WRITTEN SPACING AND LOCATION OF REINFORCING SHALL TAKE PRECEDENCE OVER DEPICTED SPACING AND LOCATION.
6. UNLESS OTHERWISE NOTED ON THE DRAWINGS, REINFORCING BARS SHOWN TERMINATING WITH A HOOK SHALL BE FABRICATED WITH A STANDARD HOOK AS DEFINED WITHIN ACI 318. WHERE SECTION THICKNESS DOES NOT ALLOW FOR FULL HOOK EXTENSION, TILT HOOK UNTIL HOOK FITS. ALTERNATIVELY CONTRACTOR MAY USE 180° HOOK OR TWO SMALLER HOOKED BARS OF EQUIVALENT AREA OF STEEL.
7. IN CASES WHERE REINFORCING BARS CANNOT BE EXTENDED AS FAR AS REQUIRED DUE TO THE LIMITED EXTENT OF THE ADJACENT CONCRETE STRUCTURE, THE BARS SHALL EXTEND AS FAR AS POSSIBLE AND BE TERMINATED WITH A STANDARD HOOK.
8. AT FOOTING CORNERS AND INTERSECTIONS, EXTEND BARS AROUND CORNERS AND LAP A MINIMUM OF 40 BAR DIAMETERS.

CONCRETE ANCHORS

1. CAST-IN ANCHOR RODS/BOLTS SHALL BE STAINLESS STEEL. TYPE 304 FOR INTERIOR DRY CONDITIONS AND TYPE 316 FOR INTERIOR WET, EXTERIOR OR SUBMERGED CONDITIONS.
2. POST-INSTALLED CONCRETE ANCHORS, INCLUDING ADHESIVE AND EXPANSION ANCHORS, SHALL CONFORM TO MANUFACTURER'S RECOMMENDATIONS AND THE APPROPRIATE EVALUATION REPORT. ANCHORS WITHOUT A CURRENT ICC-ES ESR, IAPMO-UES ER OR EQUAL SHALL NOT BE USED.
3. UNLESS OTHERWISE INDICATED, ALL ADHESIVE AND EXPANSION ANCHORS FOR INSTALLATION IN CONCRETE SHALL HAVE SATISFIED THE REQUIREMENTS OF THE SIMULATED SEISMIC TESTS OF ACI 355.4 OR ACI 355.2, NO SUBSTITUTION SHALL BE ALLOWED.
4. CONTRACTOR SHALL LOCATE EXISTING REBAR USING NON-DESTRUCTIVE METHODS PRIOR TO DRILLING HOLES FOR POST-INSTALLED ANCHORS. ADJUST SPACING OF ANCHORS TO MISS EXISTING REINFORCING. TOTAL NUMBER OF ANCHORS PROVIDED SHALL BE EQUAL TO THAT SHOWN ON THE DRAWINGS.
5. ADHESIVE ANCHORS SHALL CONSIST OF A TWO-COMPONENT RESIN ADHESIVE. THE PACKAGES CONTAINING EACH COMPONENT SHALL BE ATTACHED TO A DISPENSING MANIFOLD. AN AUGER STYLE NOZZLE SHALL BE ATTACHED FOR PROPER MIXING OF THE ADHESIVE COMPONENTS. WHERE THREADED RODS ARE REQUIRED, RODS SHALL CONFORM TO ASTM A193 GRADE B7. WHERE STAINLESS STEEL IS CALLED FOR ON THE DRAWINGS, STAINLESS STEEL SHALL BE TYPE 316.
6. WHERE THE DESIGN OF THE ANCHORAGE REQUIRES ADDITIONAL SUPPLEMENTAL CONCRETE REINFORCING STEEL TO PROTECT AGAINST CONCRETE FAILURE MODES, THE DESIGN OF THE ADDITIONAL SUPPLEMENTAL REINFORCING STEEL SHALL BE INCLUDED AS PART OF THE SUBMITTED ANCHORAGE CALCULATIONS. THE ADDITIONAL SUPPLEMENTAL CONCRETE REINFORCING STEEL SHALL BE TREATED AS PART OF THE REQUIRED BUILDING AND/OR EQUIPMENT ANCHORAGE AND SHALL BE PROVIDED AND INSTALLED AT NO ADDITIONAL COST TO THE DISTRICT.

CONCRETE JOINTS

1. REINFORCING STEEL SHOWN IS FOR CLARITY ONLY. SEE PLANS AND SECTIONS FOR REINFORCING SIZES, SPACING, LOCATIONS AND DETAILS.
2. ALL SURFACES SHALL BE PREPARED IN ACCORDANCE WITH SPECIFICATION SECTION 03150.
3. EXCEPT WHERE OTHERWISE NOTED ON THE DETAILS JUNCTION BARS (JB) SHALL BE THE SAME SIZE AS THE LARGER OF WALL OR SLAB REINFORCING.
4. ALL LAP SPLICES SHALL BE CLASS B TENSION CONTACT LAP.
5. UNLESS OTHERWISE NOTED, SEALANT SHALL BE PROVIDED IN JOINTS WHERE SHOWN ON THE DRAWINGS AND WHERE INDICATED BY THE FOLLOWING:
   a) CONTROL JOINTS FOR WALLS AND SLABS IN LIQUID CONTAINMENT STRUCTURES SHALL HAVE SEALANT APPLIED TO THE LIQUID SIDE(S) OF THE JOINT.
   b) EXPANSION JOINTS SHALL HAVE SEALANT APPLIED TO BOTH SIDES OF THE JOINT, EXCEPT FOR THE SOIL SIDE OF A JOINT FOR A BASE SLAB.
   c) CONSTRUCTION JOINTS WILL NOT REQUIRE SEALANT, UNLESS OTHERWISE NOTED ON THE DRAWINGS.
6. UNLESS OTHERWISE NOTED, WATERSTOPS SHALL BE PROVIDED IN JOINTS WHERE SHOWN ON THE DRAWINGS AND WHERE INDICATED BY THE FOLLOWING:
   a) IN ALL JOINTS IN WALLS AND SLABS OF LIQUID CONTAINMENT STRUCTURES TO PREVENT EXFILTRATION OF LIQUID INTO SOIL OR DRY AREAS OF THE STRUCTURE.
   b) IN ALL BELOW-GRADE JOINTS IN WALLS AND SLABS TO PREVENT INFILTRATION OF GROUNDWATER INTO STRUCTURE.

FRP MOLDED GRATING

1. GRATING AND SUPPORTS SHALL BE YELLOW IN COLOR, MANUFACTURED WITH POLYESTER FIRE RETARDANT RESIN WITH A FLAME SPREAD RATING OF 25 OR LESS WHEN TESTED IN ACCORDANCE WITH THE ASTM E-84 TUNNEL TEST. THICKNESS SHALL BE AS INDICATED ON THE DRAWINGS.
2. GRATING SHALL BE MOLDED, ONE-PIECE CONSTRUCTION WITH A 1 1/2" SQUARE MESH PATTERN AND A MENISCUS SURFACE.
3. GLASS CONTENT SHALL BE A MINIMUM OF 25 PERCENT AND A MAXIMUM OF 35 PERCENT BY WEIGHT AS DETERMINED BY ASTM D2584. GRATING PANELS SHALL HAVE NO EXPOSED DRY GLASS OR VOIDS CONTAINING DRY GLASS.
4. FRP GRATING SHALL BE CAPABLE OF SUPPORTING A UNIFORM LIVE LOAD OF 100 PSF WHILE MAINTAINING A DEFLECTION OF LESS THAN 1/4-INCH OR L/200 WHICHEVER IS SMALLER. GRATING SHALL BE CAPABLE OF SUPPORTING A CONCENTRATED LIVE LOAD OF 300 LB/FT TRANSVERSE TO THE SPAN. A FACTOR OF SAFETY OF 5.0 SHALL BE APPLIED TO ULTIMATE CAPACITIES TO DETERMINE ALLOWABLE SPANS.
5. CONTRACTOR SHALL BE REQUIRED TO FURNISH CERTIFIED LOAD/DEFLECTION STATISTICAL QUALITY CONTROL DATA AND LOAD/DEFLECTION INFORMATION FOR THE SUPPLIED GRATING.
6. ALL GRATING WHICH REQUIRES CUTTING DURING INSTALLATION SHALL HAVE THE AFFECTED SURFACES SEALED WITH CATALYZED RESIN SEALANT OF EQUAL OR SUPERIOR CORROSION RESISTANCE TO THE GRATING.
7. FASTENERS, ANCHORS, BOLTS, NUTS AND WASHERS FOR GRATING AND SUPPORTS SHALL BE TYPE 304 OR 316 STAINLESS STEEL. ALL FRP GRATING SHALL BE SECURELY FASTENED TO SUPPORTS WITH STAINLESS STEEL GRATING CLIPS AND STAINLESS STEEL ANCHORS, UNLESS OTHERWISE NOTED.
8. GRATING PANEL LAYOUT SHALL PROVIDE FOR THE REMOVAL OF GRATING AROUND PIPE AND OTHER GRATING PENETRATIONS. MULTIPLE GRATING SECTIONS SHALL BE PROVIDED SUCH THAT NO ONE SECTION IS GREATER THAN 75 POUNDS IN WEIGHT.

REGISTERED PROFESSIONAL ENGINEER — TERENCE J. CAVANAUGH — No. S 3107 — Exp. 12/31/23 — STRUCTURAL — STATE OF CALIFORNIA

SUBMITTED : _____

DATE : _____

THIS LINE IS 1 INCH
AT FULL SCALE
IF NOT SCALE ACCORDINGLY

SCALE : NTS
DRAWN BY : ADP
DESIGNED BY : CFW
PROJ. MGR. : TJC

NO.	ZONE	REVISIONS	BY	DATE
2		CONFORMED TO ADDENDA	CFW	7/25/23
1		ADDENDUM 3	CFW	5/2/23

WEST YOST
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
STRUCTURAL GENERAL NOTES II

JOB NUMBER 592-50-22-14
DRAWING NUMBER 00-S-002
SHEET NUMBER 26 OF 89
REVISION

TJC and ASSOCIATES, INC.

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STRUCTURAL AND MISCELLANEOUS STEEL

1. STRUCTURAL SHAPES, PLATES AND BARS SHALL CONFORM TO ASTM A36, UNLESS OTHERWISE NOTED.
2. STRUCTURAL STEEL TUBES SHALL CONFORM TO ASTM A500, GRADE B.
3. STRUCTURAL STEEL PIPE SHALL CONFORM TO ASTM A53, TYPE S, GRADE B.
4. MACHINE BOLTS (MB) SHALL CONFORM TO ASTM A307.
5. NUTS SHALL BE HEAVY HEX IN ACCORDANCE WITH ANSI B8.2.1.1.
6. ALL STRUCTURAL STEEL SHALL BE FABRICATED, ERECTED AND CONNECTED IN COMPLIANCE WITH THE LATEST AISC MANUAL.
7. CONNECTIONS FOR STRUCTURAL STEEL SHALL CONFORM TO ASTM A325, SC, CLASS A. UNLESS OTHERWISE NOTED, ALL BOLTS SHALL BE 3/4 INCH DIAMETER MEETING THE REQUIREMENTS OF ASTM A325. BOLTS SHALL BE TIGHTENED USING THE TURN-OF-THE-NUT METHOD. THREADED RODS AND ANCHOR BOLTS SHALL BE FURNISHED WITH FLAT WASHERS AND HEAVY HEX NUTS, UNLESS OTHERWISE NOTED ON DRAWINGS.
8. ALL WELDING SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE STRUCTURAL WELDING CODE, AWS (D1.1). ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS.
9. WELDING ELECTRODES SHALL MEET THE MINIMUM REQUIREMENTS OF E70XX. FILLER METAL FOR WELDS IN MOMENT CONNECTIONS SHALL HAVE A MINIMUM CVN VALUE OF 20 FT-LB AT 0 DEGREE F.
10. ALL METAL FABRICATIONS SHALL RECEIVE A SHOP COAT OF RUST INHIBITIVE PAINT MEETING FEDERAL SPECIFICATION TT-P-86, TYPE III.
11. WHERE BUTT WELDS ARE SHOWN, MATERIAL SHALL BE GROUND TO A BEVEL AND WELD SHALL BE FULL PENETRATION.
12. ALL BOLT HOLES SHALL BE PUNCHED OR DRILLED (REAMED). BURNING OF HOLES IS NOT ACCEPTABLE.
13. SHOP DRAWINGS SHALL BE SUBMITTED FOR REVIEW BY THE ENGINEER PRIOR TO FABRICATION.
14. SHOP PAINTING AND FIELD PAINTING, IF REQUIRED, SHALL BE DONE IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. STRUCTURAL STEEL SHALL BE SHOP PRIMED UNLESS OTHERWISE NOTED.

STRUCTURAL STAINLESS STEEL

1. ALL FRAMING SUPPORT SYSTEMS FOR PIPE AND VALVE ASSEMBLIES AND APPURTENANCES SHALL BE FABRICATED OF TYPE 316 STAINLESS STEEL.
2. STAIINLESS STEEL PLATES, SHEETS, AND STRUCTURAL SHAPES SHALL CONFORM TO ASTM A167, TYPE 316 (TYPE 316L FOR WELDING) STAINLESS STEEL AND SHALL NOT BE GALVANIZED.
3. STAINLESS STEEL BOLTS, NUTS, AND WASHERS SHALL CONFORM TO ASTM F593 AND ASTM F594, TYPE 316.
4. ALL STRUCTURAL STAINLESS STEEL SHALL BE FABRICATED, ERECTED AND CONNECTED IN COMPLIANCE WITH THE LATEST AISC MANUAL.
5. ALL WELDING SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE STRUCTURAL WELDING CODE, AWS (D1.1). ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS. QUALIFICATIONS AND CERTIFICATIONS OF WELDING INSPECTORS SHALL BE PER ANSI/AWS QC1.
6. ALL WORK SHALL BE FORMED TRUE TO DETAIL, WITH CLEAN, STRAIGHT, SHARPLY DEFINED PROFILES AND SMOOTH SURFACES OF UNIFORM COLOR AND TEXTURE AND FREE FROM DEFECTS IMPAIRING STRENGTH OR DURABILITY. HOLES SHALL BE DRILLED OR PUNCHED. EDGES SHALL BE SMOOTH AND WITHOUT BURRS. FABRICATE SUPPLEMENTARY PIECES NECESSARY TO COMPLETE EACH ITEM EVEN IF SUCH PIECES ARE NOT DEFINITIVELY SHOWN OR SPECIFIED.
7. CONNECTIONS AND ACCESSORIES SHALL BE OF SUFFICIENT STRENGTH TO SAFELY WITHSTAND THE STRESSES AND STRAINS TO WHICH THEY WILL BE SUBJECTED. EXPOSED JOINTS SHALL BE CLOSE-FITTING AND JOINTED WHERE LEAST CONSPICUOUS. THREADED CONNECTIONS SHALL HAVE THE THREADS CONCEALED WHERE PRACTICAL. WELDED CONNECTIONS SHALL HAVE CONTINUOUS WELDS OR INTERMITTENT WELDS AS SPECIFIED OR SHOWN. THE FACE OF WELDS SHALL BE DRESSED FLUSH AND SMOOTH. PROVIDE HOLES FOR TEMPORARY FIELD CONNECTIONS AND FOR ATTACHMENT OF THE WORK OF OTHER TRADES.
8. ALL ANCHORING AND CONNECTING HARDWARE SHALL BE TYPE 316 STAINLESS STEEL.

ABBREVIATIONS:

Ø	DIAMETER
AB	ANCHOR BOLT
ACI	AMERICAN CONCRETE INSTITUTE
ADDL	ADDITIONAL
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AISI	AMERICAN IRON AND STEEL INSTITUTE
AITC	AMERICAN INSTITUTE OF TIMBER CONSTRUCTION
AL	ALUMINUM
ALT	ALTERNATE(ING)
APPROX	APPROXIMATE(LY)
AR	ANCHOR ROD
ARND	AROUND
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASTM	ASTM INTERNATIONAL
ATR	ALL-THREADED ROD
AWS	AMERICAN WELDING SOCIETY
B TO B	BACK TO BACK
BLDG	BUILDING
BLK	BLOCK(ING)
BM	BEAM
BN	BOUNDARY NAILING
B.O.	BOTTOM OF
BOT	BOTTOM
BRG	BEARING
BTWN	BETWEEN
CBC	CALIFORNIA BUILDING CODE
C/C	CENTER TO CENTER
CHKD	CHECKERED
CIRC	CIRCUMFERENTIAL
CJ	CONSTRUCTION JOINT
CL	CENTERLINE
CLG	CEILING
CLKG	CAULKING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS
CRS	COURSE(S)
CRSI	CONCRETE REINFORCING STEEL INSTITUTE
CSK	COUNTERSINK
CTJ	CONTROL JOINT
CTR	CENTER (ED)
D	DEEP, DEPTH
d	PENNY
d_b	BAR DIAMETER
DBL	DOUBLE
DEMO	DEMOLITION
DET	DETAIL
DF	DOUGLAS FIR
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DL	DEAD LOAD
DN	DOWN
DO.	DITTO
DP	DAMPROOFING
DR	DRAIN
DWG(S)	DRAWING(S)
DWL(S)	DOWEL(S)
(E)	EXISTING
EA	EACH
EB	EXPANSION BOLT
ECC	ECCENTRIC
ED	EQUIPMENT DRAIN
EF	EACH FACE
EL	ELEVATION
EMBED	EMBEDMENT
EN	EDGE NAILING
EOR	ENGINEER OF RECORD
EQ	EQUAL (LY)
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
ES	EACH SIDE
ESR	EVALUATION SERVICE REPORT
ETC	ETCETERA
EW	EACH WAY
EXP	EXPANSION
EXP JT	EXPANSION JOINT
EXST	EXISTING
EXT	EXTERIOR
EY	EPOXY
f'c	CONCRETE COMPRESSIVE STRENGTH
f'm	MASONRY PRISM STRENGTH
FAB	FABRICATE (OR, ED)
FD	FLOOR DRAIN
FDN	FOUNDATION
FHMS	FLATHEAD MACHINE SCREW
FHWS	FLATHEAD WOOD SCREW
FIG	FIGURE
FIN	FINISH (ED)
FL	FLOOR
FLEX	FLEXIBLE
FO	FACE OF
FRP	FIBERGLASS REINFORCED PLASTIC
FTG	FOOTING
FURN	FURNISHED
GA	GAGE
GALV	GALVANIZED
GALVS	GALVANIZED STEEL
GLB	GLUE LAMINATED BEAM
GR	GUARD RAIL
GRTG	GRATING
H.A.S.	HEADED ANCHOR STUD
HD	HAND
HDR	HEADER
HDWD	HARDWOOD
HGR	HANGER
HGT	HEIGHT
HM	HOLLOW METAL
HOR	HORIZONTAL
HP	HIGH POINT
HR	HANDRAIL
HS	HIGH STRENGTH
IAMPO	INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICALS
ICC	INTERNATIONAL CODE COUNCIL
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
I.F.	INSIDE FACE
IN	INCHES
INT	INTERIOR
I.P.S.	IRON PIPE SIZE
JB	JUNCTION BAR
JT	JOINT
JT FLR	JOINT FILLER
Ld	DEVELOPMENT LENGTH
Ldh	DEVELOPMENT LENGTH STANDARD HOOK
LG	LONG
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LNTL	LINTEL
LONG.	LONGITUDINAL
LP	LOW POINT
Ls	CLASS B TENSION CONTACT LAP SPLICE
LT	LEFT
LW	LIGHTWEIGHT
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MCJ	MASONRY CONTROL JOINT
MFR	MANUFACTURER
MIN	MINIMUM
MO	MASONRY OPENING
MTL	METAL
NAAMM	NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS
NIC	NOT IN CONTRACT
NOM	NOMINAL
NSG	NON-SHRINK GROUT
NTS	NOT TO SCALE
O/E	OR EQUAL
OC	ON CENTER
OD	OUTSIDE DIAMETER
O.F.	OUTSIDE FACE
OPNG(S)	OPENING(S)
OPP	OPPOSITE
OPP HD	OPPOSITE HAND
OPT	OPTION (AL)
PCF	POUNDS PER CUBIC FOOT
PJF	PREMOLDED JOINT FILLER
PL	PLATE
PLYWD	PLYWOOD
PM	PRESSED METAL
PRCST	PRECAST
PREFAB	PRE-FABRICATED
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT
PT	PRESSURE TREATED
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
PWT	PREFABRICATED WOOD TRUSS
R	RISER
RAD	RADIUS
RC	REINFORCED CONCRETE
RD	ROOF DRAIN
REF	REFERENCE / REFER
REINF	REINFORCE (D, ING)
REQD	REQUIRED
REV	REVISION
RM	ROOM
RO	ROUGH OPENING
RT	RIGHT
SB	SOLID BLOCKING
SCHED	SCHEDULE
SECT	SECTION
SHT	SHEET
SIM	SIMILAR
SL	SLOPE
SLNT	SEALANT
SP	SPACE (S, ED)
SPEC	SPECIFICATION, SPECIFIED
SQ	SQUARE
SS	STAINLESS STEEL
SSMH	SANITARY SEWER MANHOLE
STD	STANDARD
STIF	STIFFENER
STIR	STIRRUP (S)
STL	STEEL
STRUC	STRUCTURE (S, URAL)
STWY	STAIRWAY
SYM	SYMMETRICAL
T	TREAD (S)
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
TD	TRENCH DRAIN
THD	THREADED
THK	THICK (NESS)
TJ	TOOLED JOINT
T.O.	TOP OF
TOC	TOP OF CONCRETE
TOS	TOP OF STEEL
T.O.W.	TOP OF WALL
TPER	THERMOPLASTIC ELASTOMERIC RUBBER
TRNSV	TRANSVERSE
TYP	TYPICAL
UES	UNIFORM EVALUATION SERVICES
UON	UNLESS OTHERWISE NOTED
VERT	VERTICAL
VIF	VERIFY IN FIELD
VR	VAPOR RETARDER
W	WIDE
W/	WITH
WF	WIDE FLANGE
W/O	WITHOUT
WD	WIDTH / WOOD
WP	WORKING POINT
WPG	WATERPROOFING
WS	WATERSTOP
WT	WEIGHT
WWF	WELDED WIRE FABRIC

ABBREVIATION NOTES:

1. ABBREVIATIONS AND DESIGNATIONS FOR STEEL MEMBERS MAY BE FOUND IN THE CURRENT STEEL CONSTRUCTION MANUAL BY AISC.
2. ABBREVIATIONS OF TECHNICAL SOCIETIES AND TRADE ASSOCIATIONS MAY BE FOUND IN THE SPECIFICATIONS
3. WELDING SYMBOLS AND ABBREVIATIONS MAY BE FOUND IN AWS 2.4.
4. ABBREVIATIONS LISTED ARE FOR USE WITH STRUCTURAL DRAWINGS ONLY. SOME ABBREVIATIONS LISTED MAY NOT BE USED ON THE PLANS.

LEGEND:

CLASS II AGGREGATE BASE

CONCRETE

CONCRETE GROUT

ASPHALT

STRUCTURAL FILL/BACKFILL

UNDISTURBED EARTH

FIBERGRATE MOLDED GRATING

REGISTERED PROFESSIONAL ENGINEER TERENCE J. CAVANAUGH No. S 3107 Exp. 12/31/23 STRUCTURAL STATE OF CALIFORNIA

SUBMITTED : _____

DATE : _____

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DRAWN BY : ADP
DESIGNED BY : CFW
PROJ. MGR. : TJC

NO.	ZONE	REVISIONS	BY	DATE
2		CONFORMED TO ADDENDA	CFW	7/25/23
1		ADDENDUM 3	CFW	5/2/23

WEST YOST Water. Engineered.

Ukiah Utilities A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
STRUCTURAL GENERAL NOTES III, LEGEND AND ABBREVIATIONS

JOB NUMBER 592-50-22-14
DRAWING NUMBER 00-S-003
SHEET NUMBER 27 OF 89
REVISION

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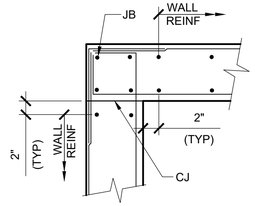
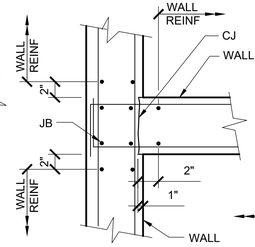
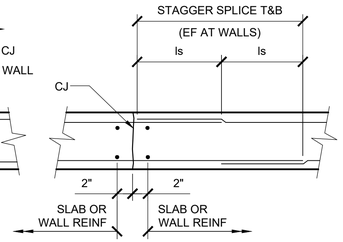


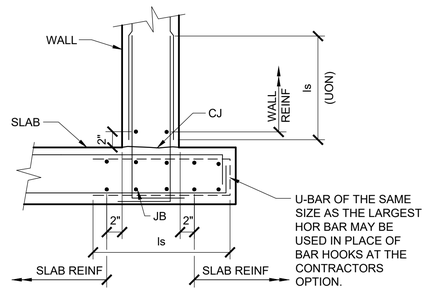
WALL TO WALL (PLAN)



NON-WATER BEARING (PLAN)



SLAB OR WALL CONTINUATION (PLAN/SECTION)



WALL TO BOTTOM SLAB (SECTION)

CONSTRUCTION JOINT NOTES:

1. REINFORCING SHOWN IS FOR CLARITY ONLY. SEE PLANS AND SECTIONS FOR REINFORCING SIZES, SPACING, LOCATION AND DETAILS.
2. ALL SURFACES SHALL BE PREPARED IN ACCORDANCE WITH PROJECT SPECIFICATIONS.
3. JUNCTION BARS SHALL BE SAME SIZE OF THE LARGER OF WALL OR SLAB REINFORCING EXCEPT WHERE OTHERWISE NOTED ON THE DETAILS OR DRAWINGS. THESE ARE ADDITIONAL BARS TO THOSE CALLED OUT FOR WALLS & SLABS. JUNCTION BARS SHALL BE PLACED INSIDE PRIMARY REINFORCING.
4. ALL LAP SPLICES SHALL BE CLASS B TENSION CONTACT LAP.
5. SEE PLANS & SECTIONS FOR LOCATION OF JOINTS.
6. UNLESS OTHERWISE NOTED, WITHIN CONTRACT DOCUMENTS, REINFORCING BARS SHALL TERMINATE WITH A STANDARD HOOK. WHERE SECTION THICKNESS DOES NOT ALLOW FOR FULL HOOK EXTENSION, ROTATE HOOK UNTIL HOOK FITS. ALTERNATIVELY, CONTRACTOR MAY USE 180° HOOK OR TWO SMALLER HOOKED BARS OF EQUIVALENT AREA OF STEEL.
7. SEE PLANS AND SECTIONS FOR ORIENTATION OF PRIMARY REINFORCING.

CONSTRUCTION JOINT (CJ)

DETAIL 03002 VAR
NTS

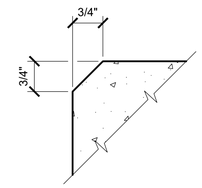
	BAR SIZE	ld (INCHES)		ls (INCHES)		ldh
		TOP BAR	OTHER	TOP BAR	OTHER	(INCHES)
f'c (PSI) CONCRETE 2500	#3	24	19	32	25	9
	#4	32	25	42	33	12
	#5	39	30	51	39	15
	#6	47	37	62	49	18
	#7	69	54	90	71	21
	#8	78	60	102	78	24
	#9	88	68	115	89	28
	#10	100	77	130	101	31
f'c (PSI) CONCRETE 4000	#3	19	15	25	20	8
	#4	25	20	33	26	10
	#5	31	24	41	32	12
	#6	37	29	49	38	15
	#7	54	42	71	55	17
	#8	62	48	81	63	19
	#9	70	54	91	71	22
	#10	79	61	103	80	25

NOTES:

1. ld: DEVELOPMENT LENGTH FOR A STRAIGHT REINFORCING BAR IN TENSION.
   ls: CLASS B TENSION CONTACT LAP SPLICE LENGTH.
   ldh: DEVELOPMENT LENGTH FOR STANDARD HOOKS IN TENSION.
2. LAP SPLICES SHALL BE CLASS B TENSION CONTACT LAP SPLICES TYPICAL, UNLESS OTHERWISE NOTED ON DRAWINGS.
3. TOP BAR IS ANY HORIZONTAL BAR WITH MORE THAN 12" CONCRETE CAST IN ONE LIFT BENEATH THE BAR, INCLUDING BUT NOT LIMITED TO, HORIZONTAL BARS CAST IN WALLS..
4. SPLICES IN HORIZONTAL BARS SHALL BE STAGGERED.
5. UNLESS OTHERWISE DETAILED ON THE DRAWINGS, SPLICES IN TWO CURTAINS SHALL NOT OCCUR IN THE SAME LOCATION.

LAP SPLICE LENGTH

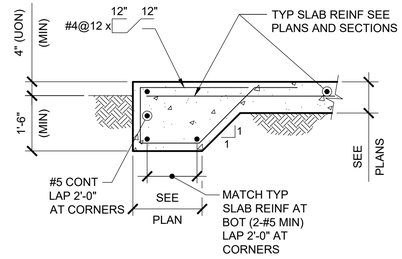
DETAIL 03026 VAR
NTS



UON ON DRAWINGS

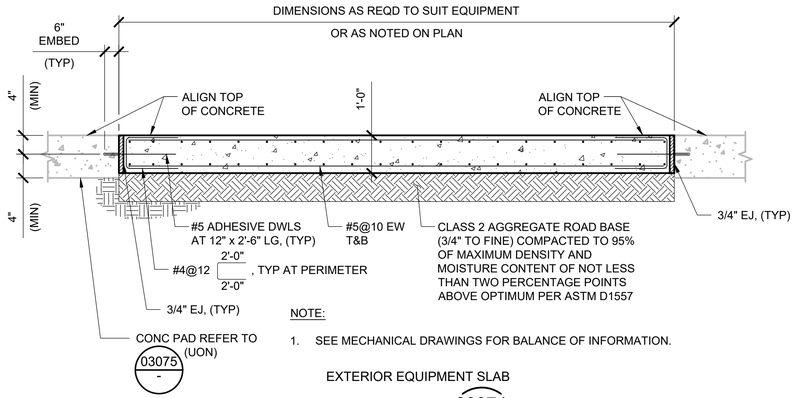
CONCRETE CHAMFER

DETAIL 03028 VAR
NTS



THICKENED SLAB EDGE

DETAIL 03032 VAR
NTS

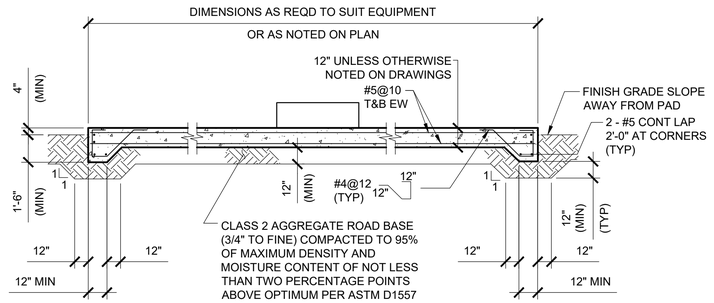


NOTE:

1. SEE MECHANICAL DRAWINGS FOR BALANCE OF INFORMATION.

EXTERIOR EQUIPMENT SLAB

DETAIL 03074 VAR
NTS



EXTERIOR EQUIPMENT SLAB

DETAIL 03075 VAR
NTS

REGISTERED PROFESSIONAL ENGINEER TERENCE J. CAVANAUGH No. S 3107 Exp. 12/31/23 STRUCTURAL STATE OF CALIFORNIA

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DESIGNED BY : CFW
PROJ. MGR. : TJC

NO.	ZONE	REVISIONS	BY	DATE
2		CONFORMED TO ADDENDA	CFW	7/25/23
1		ADDENDUM 3	CFW	5/2/23

WEST YOST
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
STRUCTURAL STANDARD DETAILS I

JOB NUMBER 592-50-22-14
DRAWING NUMBER 00-S-004
SHEET NUMBER 28 OF 89
REVISION

TJC and ASSOCIATES, INC.

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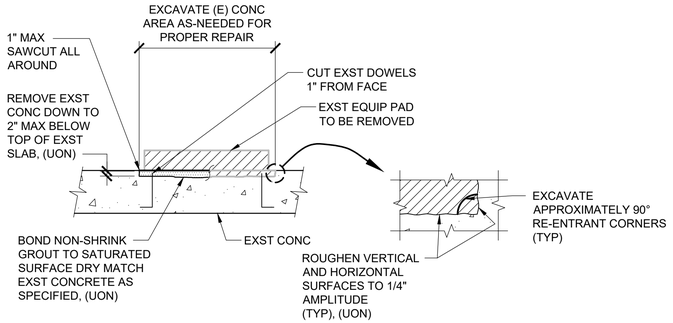
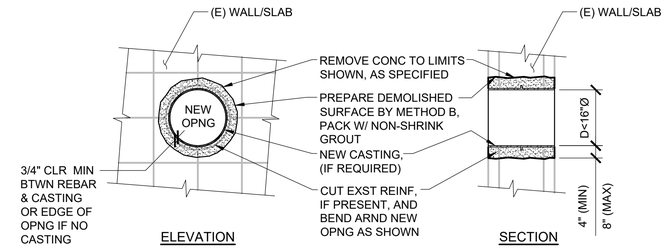


NOTE:

1. SEE PROJECT SPECIFICATION AND MECHANICAL DRAWINGS FOR ADDITIONAL INFORMATION.

EXISTING EQUIPMENT PAD REMOVAL AND SLAB REPAIR

DETAIL NTS 03153 VAR

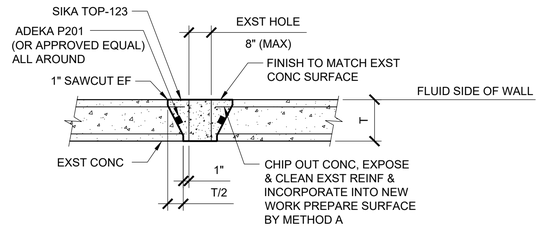


NOTES:

1. SEE PROJECT SPECIFICATION FOR CONCRETE SURFACE PREPARATION (METHOD B) AND ADDITIONAL INFORMATION.
2. SEE MECHANICAL DRAWINGS FOR BALANCE OF INFORMATION.

NEW PENETRATION THROUGH EXISTING CONCRETE

DETAIL NTS 03156 VAR

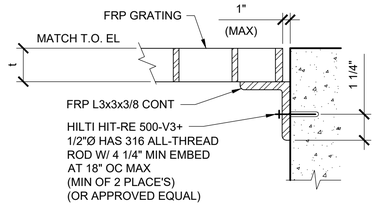


NOTES:

1. SEE PROJECT SPECIFICATION FOR CONCRETE SURFACE PREPARATION (METHOD A) AND ADDITIONAL INFORMATION.
2. SEE MECHANICAL DRAWINGS FOR BALANCE OF INFORMATION.

6" TO 8"Ø PIPE REMOVAL WALL PENETRATION

DETAIL NTS 03159 VAR



GRATING SUPPORT

NOTE:

1. GRATING AND GRATING SUPPORTS SHALL BE PROVIDED BY THE SAME MANUFACTURER.

FRP GRATING SUPPORT

DETAIL NTS 06001 VAR

REGISTERED PROFESSIONAL ENGINEER TERENCE J. CAVANAUGH No. S 3107 Exp. 12/31/23 STRUCTURAL STATE OF CALIFORNIA

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1		ADDENDUM 3	CFW	5/2/23

WEST YOST Water. Engineered.

Ukiah Utilities A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
STRUCTURAL STANDARD DETAILS II

JOB NUMBER 592-50-22-14
DRAWING NUMBER 00-S-005
SHEET NUMBER 29 OF 89
REVISION

TJC and ASSOCIATES, INC.

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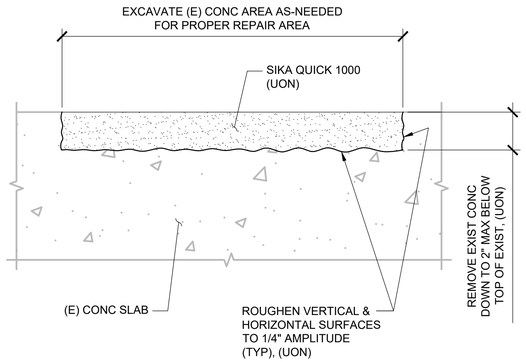


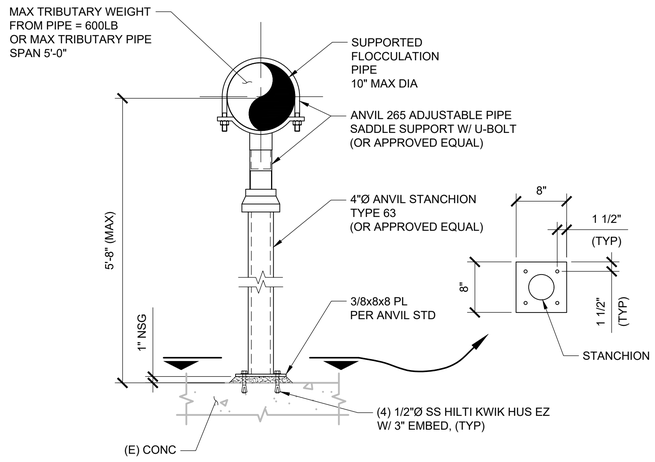
NOTE:

1. REFER TO DETAIL 03153 / 00-S-005 FOR BALANCE OF INFORMATION.

CONCRETE SLAB REPAIR

DETAIL A

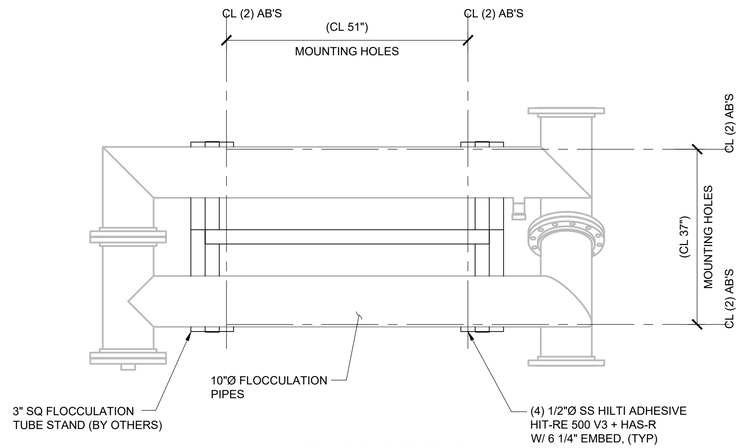
SCALE: 3"=1'-0" 70-D-001 & 70-D-006



HORIZONTAL PIPE SUPPORT

DETAIL B

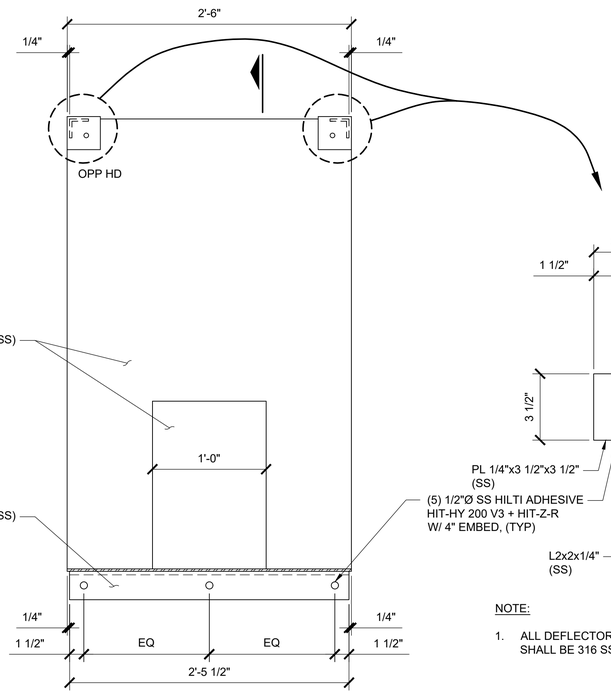
SCALE: 1"=1'-0" 70-M-001

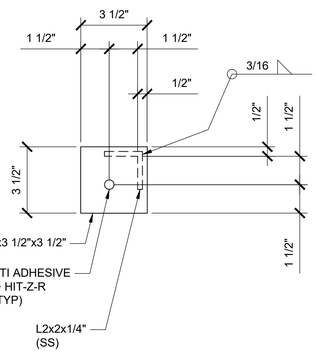


FLOCCULATION TUBE STAND

DETAIL C

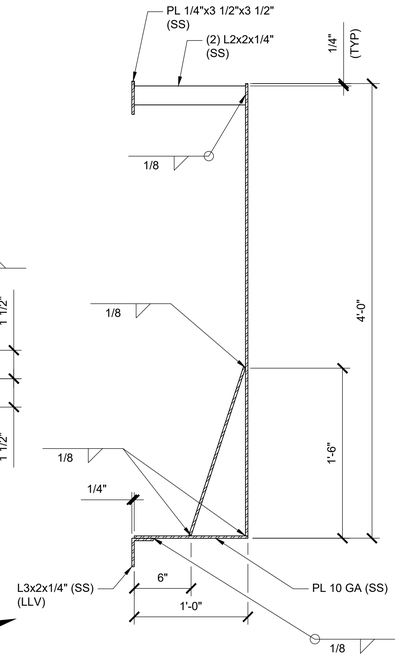
SCALE: NTS 70-M-001





NOTE:

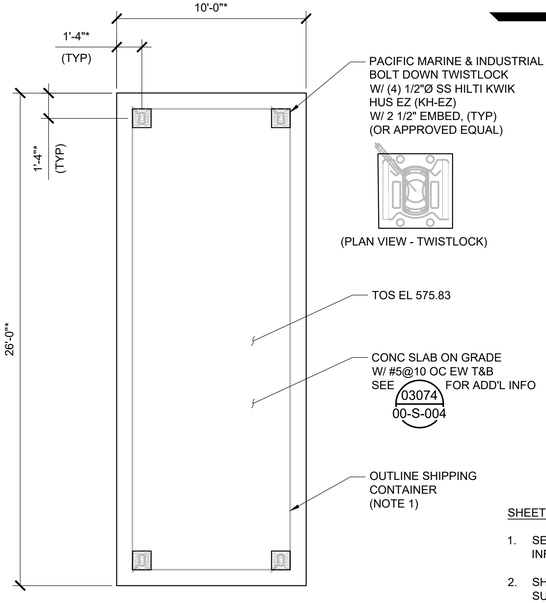
1. ALL DEFLECTOR PLATE MATERIALS SHALL BE 316 SS.



DEFLECTOR PLATE

DETAIL D

SCALE: 1 1/2"=1'-0" -



SHEET NOTES:

1. SEE MECHANICAL DRAWINGS FOR BALANCE OF INFORMATION.
2. SHIPPING CONTAINER IS A DEFERRED SUBMITTAL ITEM AND IS THE RESPONSIBILITY OF THE CONTRACTOR. SHIPPING CONTAINER HAS NOT BEEN DESIGNED BY THE ENGINEER OF RECORD. REFER TO STRUCTURAL NOTES AND PROJECT SPECIFICATIONS FOR ADDITIONAL INFORMATION.

NOTE:

1. FINAL DIMENSION TO BE COORDINATED WITH SHIPPING CONTAINER MANUFACTURER.

SHIPPING CONTAINER FOUNDATION PLAN

SCALE: 1/4"=1'-0" 70-M-004

REGISTERED PROFESSIONAL ENGINEER
TERENCE J. CAVANAGH
No. S 3107
Exp. 12/31/23
STRUCTURAL
STATE OF CALIFORNIA

SUBMITTED : _____

DATE : _____

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PROJ. MGR. : TJC

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1		ADDENDUM 3	CFW	5/2/23

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Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MISCELLANEOUS DETAILS

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-S-001
SHEET NUMBER 30 OF 89
REVISION

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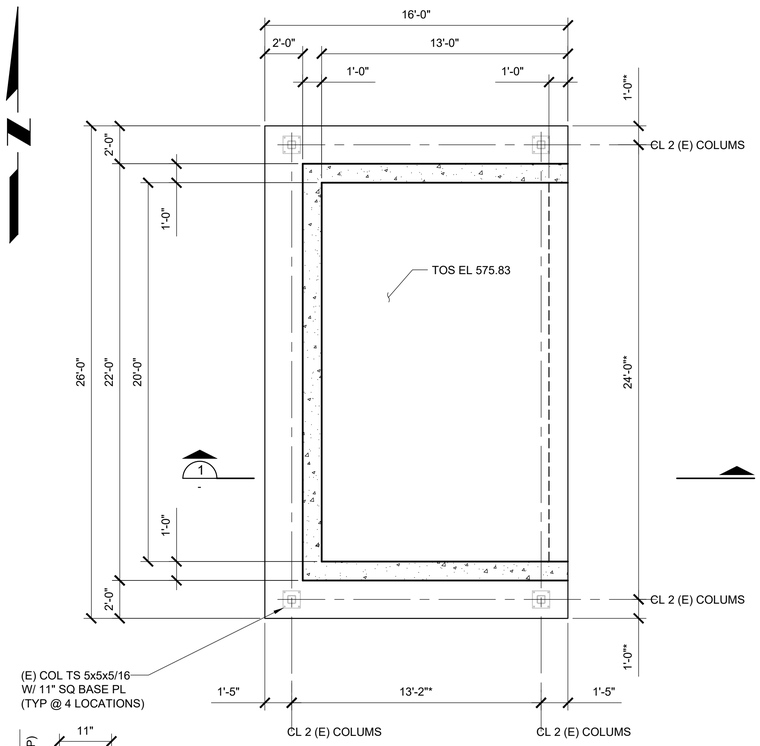
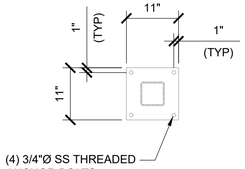




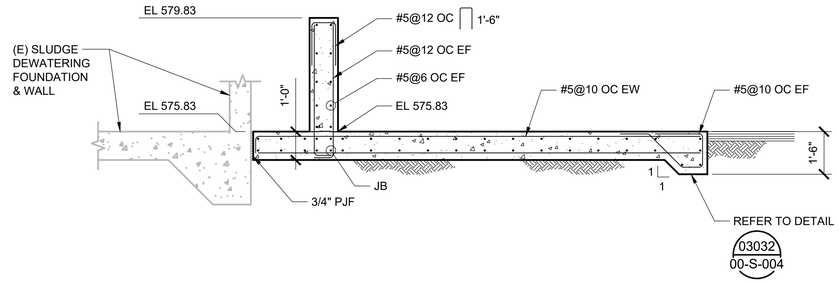
(E) 11" SQ COL & BASE PL W/ 3/4" NSG
PLAN VIEW
(TYP)

NOTES:

1. EXISTING STRUCTURE NOT SHOWN FOR CLARITY, SEE SECTION.
2. TEMPORARILY DISPLACE EXISTING CANOPY INCLUDING EXISTING COLUMNS & CL BASE PLATES, TO ACCOMMODATE NEW REINFORCED CONCRETE WALL AND SLAB AS SHOWN.

DEWATERED SOLIDS CONTAINMENT WALL

SCALE: 1/4"=1'-0" 75-M-100



SECTION 1
SCALE: 3/8"=1'-0" -

SHEET NOTE:

1. SEE MECHANICAL DRAWINGS FOR BALANCE OF INFORMATION.

REGISTERED PROFESSIONAL ENGINEER
TERENCE J. CAVANAGH
No. S 3107
Exp. 12/31/23
STRUCTURAL
STATE OF CALIFORNIA

SUBMITTED : _____

DATE : _____

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DESIGNED BY : CFW
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1		ADDENDUM 3	CFW	5/2/23

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Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
PLANS AND SECTIONS

JOB NUMBER 592-50-22-14
DRAWING NUMBER 75-S-001
SHEET NUMBER 31 OF 89
REVISION

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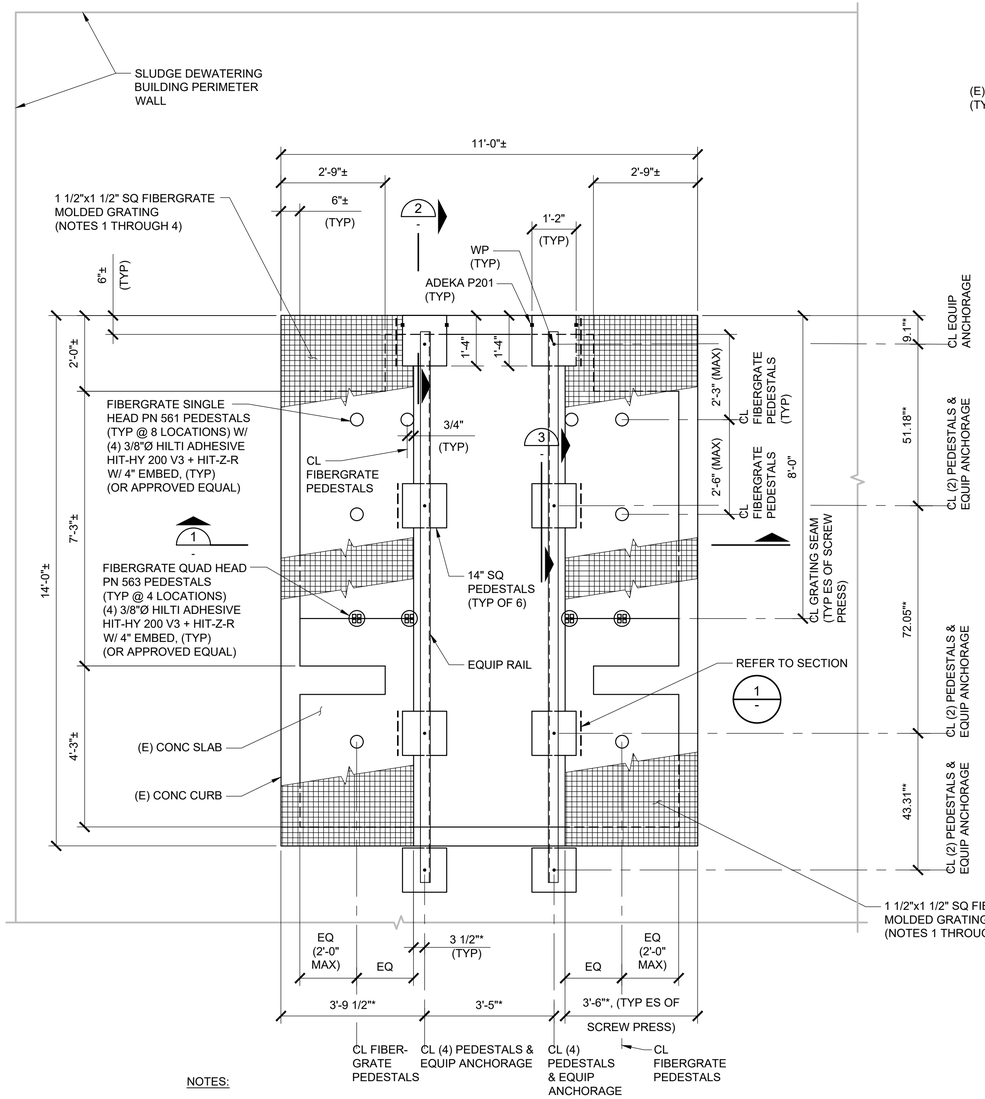
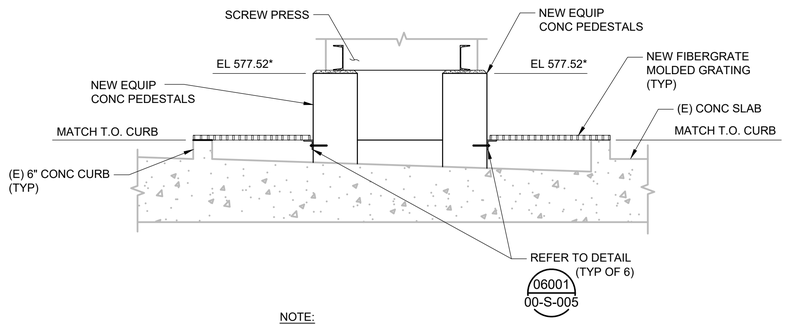


NOTES:

1. AT GRATING ABUTMENTS, USE SS F-STYLE CLIPS SPACED AT 24" OC, MAXIMUM (OR APPROVED EQUAL). INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
2. MOUNT GRATING TO CONCRETE CURBS WITH 1/4"Ø SS x 3 1/4" (MINIMUM) TAPCONS WITH M-STYLE CLIPS SPACED AT MINIMUM 24" OC OR (4) PER GRATE WITH 1 1/12" MINIMUM CONCRETE EMBEDMENT (OR APPROVED EQUAL). INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
3. MOUNT GRATING TO ANGLE SUPPORTS WITH SS M-STYLE CLIPS, (2) MINIMUM AT EQUAL SPACED. (OR APPROVED EQUAL). INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
4. INSTALLATION SHALL COMPLY WITH MANUFACTURER'S RECOMMENDATIONS.

SCREW PRESS PLAN

SCALE: 1/2"=1'-0" 75-M-100

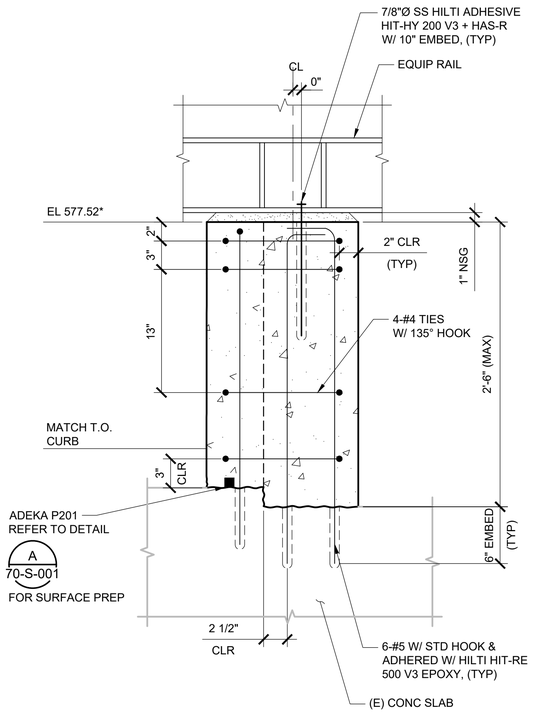


NOTE:

1. EXISTING CONCRETE SLAB REINFORCEMENT NOT SHOWN FOR CLARITY.

SECTION 1

SCALE: 1/2"=1'-0"

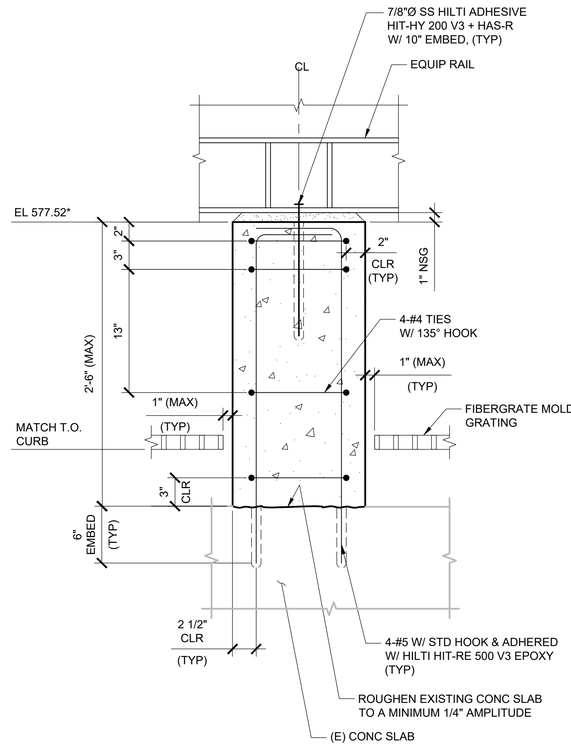


NOTES:

1. CONCRETE PEDESTALS HEIGHT VARY DUE TO EXISTING SLAB SLOPE.
2. EXCAVATE EXISTING 6" CONCRETE CURB TO ACCOMMODATE NEW EQUIPMENT PEDESTALS.
3. FIBERGRATE MOLDED GRATING NOT SHOWN FOR CLARITY.

SECTION 2

SCALE: 1 1/2"=1'-0"



NOTE:

1. CONCRETE PEDESTALS HEIGHT VARY DUE TO EXISTING SLAB SLOPE.

SECTION 3

SCALE: 1 1/2"=1'-0"

REGISTERED PROFESSIONAL ENGINEER — TERENCE J. CAVANAUGH — No. S 3107 — Exp. 12/31/23 — STRUCTURAL — STATE OF CALIFORNIA

SUBMITTED : _____

DATE : _____

THIS LINE IS 1 INCH AT FULL SCALE IF NOT SCALE ACCORDINGLY

SCALE : AS SHOWN
DRAWN BY : ADP
DESIGNED BY : CFW
PROJ. MGR. : TJC

NO.	ZONE	REVISIONS	BY	DATE
2		CONFORMED TO ADDENDA	CFW	7/25/23
1		ADDENDUM 3	CFW	5/2/23

WEST YOST Water. Engineered.

Ukiah Utilities — A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
PLANS AND SECTIONS

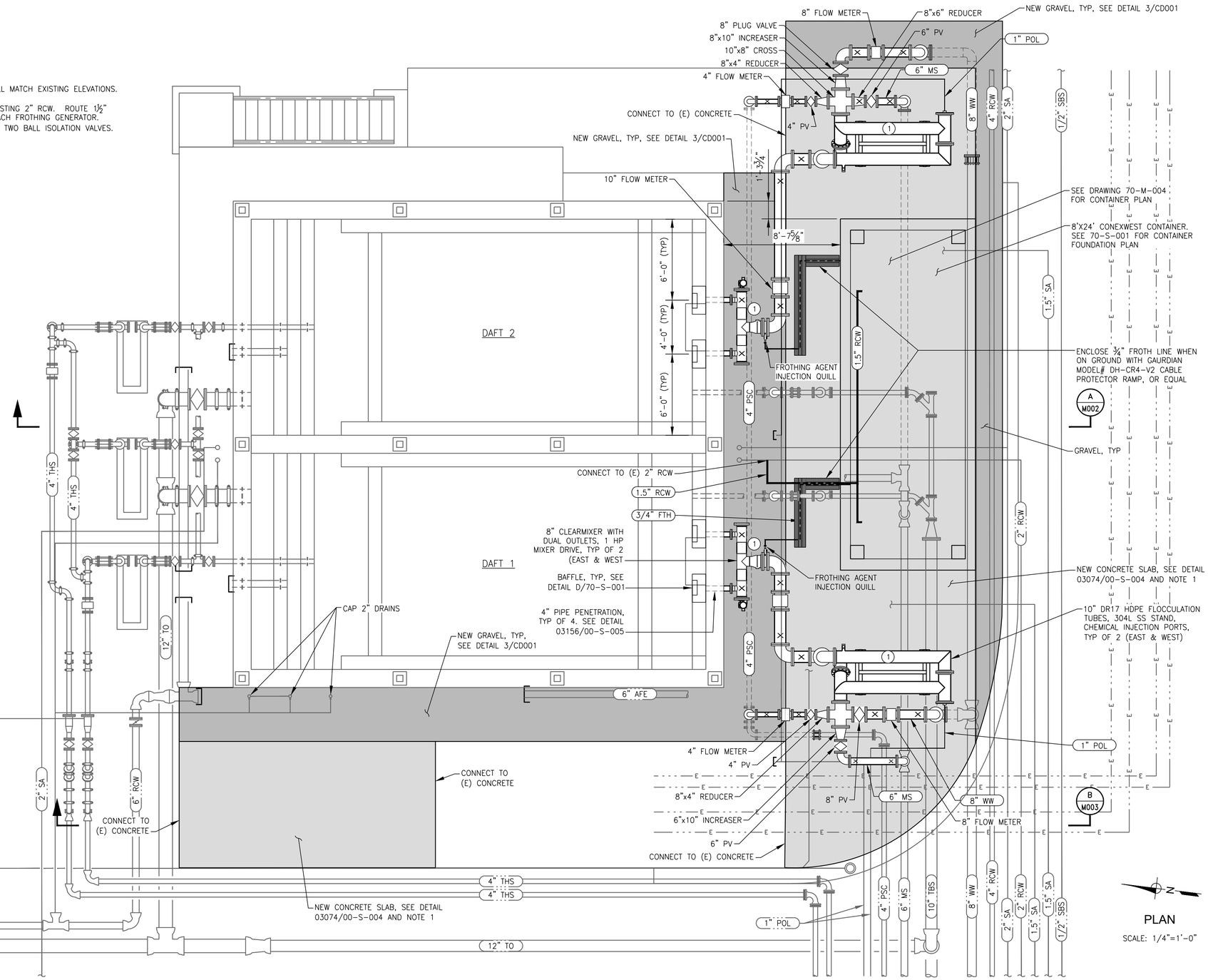
JOB NUMBER 592-50-22-14
DRAWING NUMBER 75-S-002
SHEET NUMBER 32 OF 89
REVISION

C:\Users\AndriaPrior\TJCAA Dropbox\Andria Prior\W Drive- CADD from Sharepoint\2021 Projects\121042 - WY, Ukiah Sludge Imp\03 Conformed to Addenda\Stru\75-S-002.dwg 7-25-23 09:22:04 AM AndriaPrior

NOTE:
1. NEW CONCRETE SLABS SHALL MATCH EXISTING ELEVATIONS.
2. CONNECT 1 ½" RCW TO EXISTING 2" RCW. ROUTE 1½" RCW INTO CONTAINER TO EACH FROTHING GENERATOR. PROVIDE ONE 1½" PRV AND TWO BALL ISOLATION VALVES.

(1) TO BE PROVIDED BY CITY. ASSEMBLY AND INSTALLATION BY CONTRACTOR

× PIPE SUPPORT LOCATIONS. SEE DETAIL B/70-S-001.



PLAN
SCALE: 1/4"=1'-0"

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY R. BANYAI
No. C60715
Exp. 12-31-24
CIVIL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

THIS LINE IS 1 INCH
AT FULL SCALE
IF NOT SCALE ACCORDINGLY

SCALE : 1/4"=1'-0"
DRAWN BY : SMB
DESIGNED BY : TS
PROJ. MGR. : TRB

WEST YOST
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DAFT EQUIPMENT PLAN

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-M-001
SHEET NUMBER 33 OF 89
REVISION

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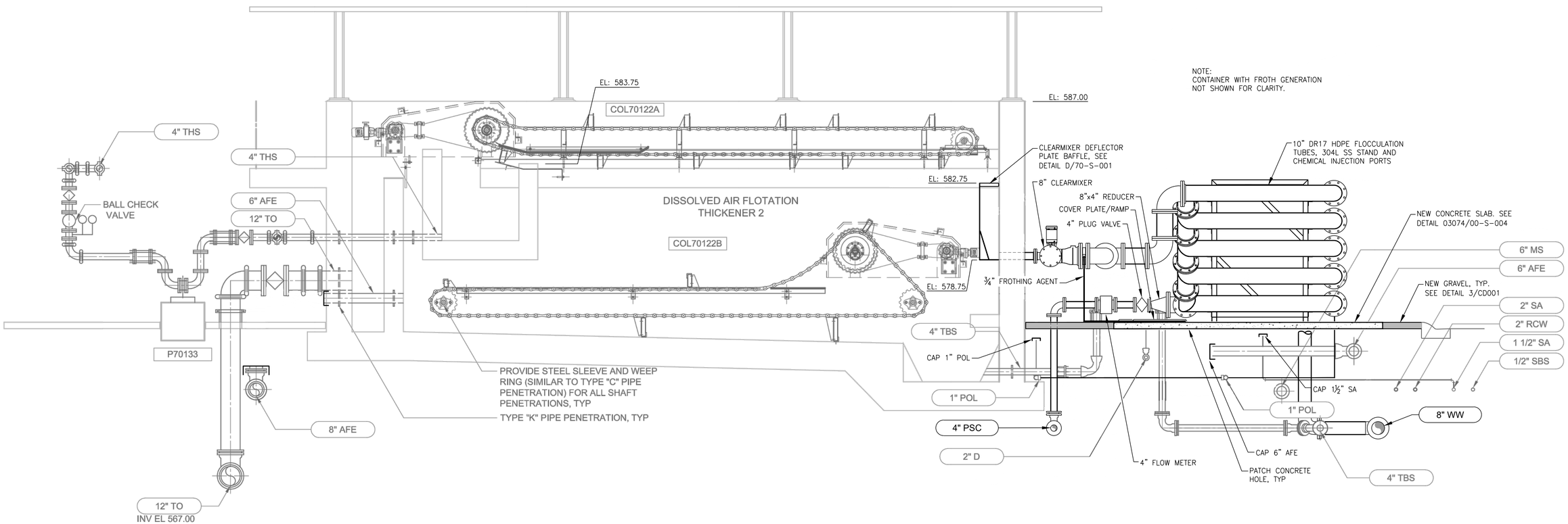

SECTION A/M001

SCALE: 3/8"=1'-0"

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY R. BANYAI
No. C60715
Exp. 12-31-24
CIVIL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

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AT FULL SCALE
IF NOT SCALE ACCORDINGLY

SCALE : 3/8"=1'-0"
DRAWN BY : SMB
DESIGNED BY : TS
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DAFT SECTION 1

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-M-002
SHEET NUMBER 34 OF 89
REVISION

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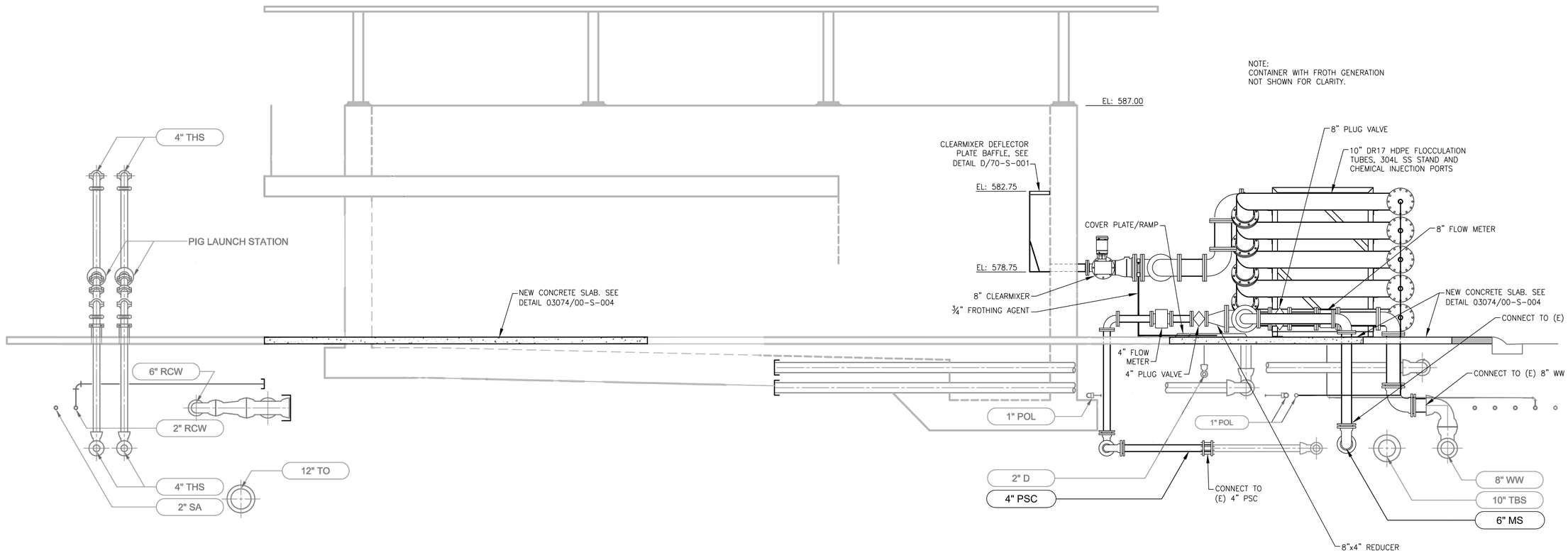

SECTION B/M001

SCALE: 3/8"=1'-0"

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY R. BANYAI
No. C60715
Exp. 12-31-24
CIVIL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

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AT FULL SCALE
IF NOT SCALE ACCORDINGLY

SCALE : 3/8"=1'-0"
DRAWN BY : SMB
DESIGNED BY : TS
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

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Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DAFT SECTION 2

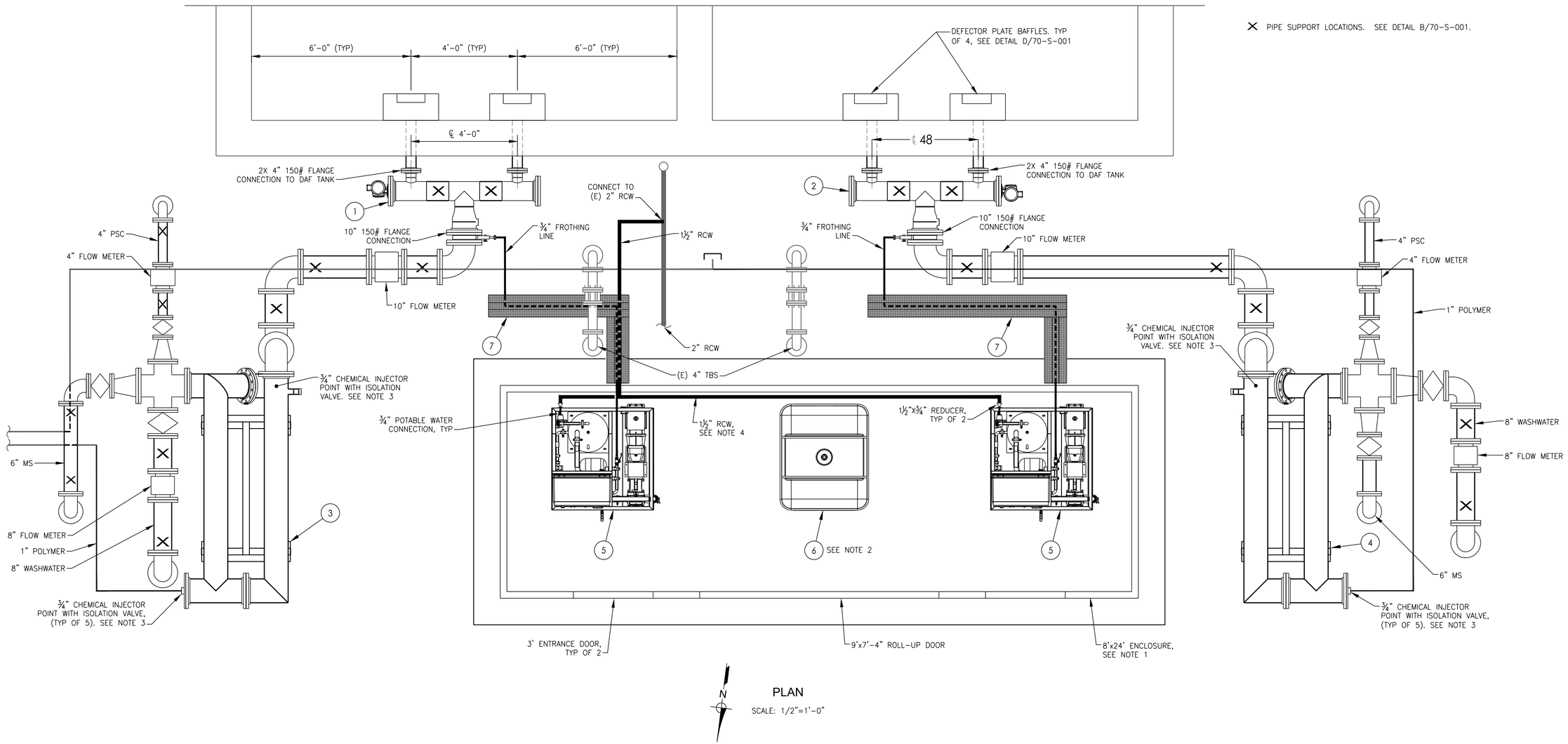
JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-M-003
SHEET NUMBER 35 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\SAF Project\592-50-22-14-70-M-003.dwg 7-17-23 08:55:55 AM sbarber

TABLE 1: GENERAL ASSEMBLY CALL OUT			
ITEM NO.	DESCRIPTION	QTY.	MATERIAL
1	BIN CLEARMIXER WITH DUAL OUTLETS, 1HP MIXER DRIVE	1	304L SS
2	BIN CLEARMIXER WITH DUAL OUTLETS, 1HP MIXER DRIVE	1	304 L SS
3	10 IN DR17 HDPE FLOCCULATION TUBES LEFT, 304L SS STAND, CHEMICAL INJECTION POINTS	1	HDPE
4	10 IN DR17 HDPE FLOCCULATION TUBES RIGHT, 304L SS STAND, CHEMICAL INJECTION POINTS	1	HDPE
5	HERON F50 SAF FROTH GENERATOR, 5 HP RECYCLE PUMPS	2	304L SS
6	CHEMICAL TOTE FOR FROTHING AGENT	2	–
7	GUARDIAN MODEL# DH–CR4–V2 CABLE PROTECTOR RAMP, OR EQUAL	5	POLYETHYLENE

NOTES:
1. PROVIDE 8'x24' STEEL CONTAINER WITH THE FOLLOWING FEATURES:
   a. 24'Lx8"Wx9'–6"H
   b. LIGHT BEIGE WITH LOCK BOX
   c. 8'x7'–4" ROLL–UP DOOR – 26 GA. GALVANIZED STEEL CURTAIN
   d. TWO 3'x6'–8" STEEL DOORS
   e. 12"x12" LOUVERED VENT
   f. 8,000 BTU A/C UNIT WITH HEATER, 100V, 20 AMPS
   g. ELECTRICAL PACKAGE WITH 3 CIRCUITS, 4 RECEPTACLES, 4 LED LIGHTS, AND 125A LOAD CENTER
   h. 10–YEAR WARRANTY AGAINST LEAKAGE
   i. MANUFACTURED BY CONEXWEST, OR EQUAL. SUBMIT SHOP DRAWINGS WITH CATALOG CUTS.
2. ROUTE ¾" FLEXIBLE PVC HOSE FROM TOTE TO FROTH GENERATORS.
3. PROVIDE ¾" FLEXIBLE HOSE FOR POLYMER INJECTION FROM ABOVE GROUND TO INJECTION POINTS.
4. CONNECT 1½" RCW TO EXISTING 2" RCW. ROUTE 1½" RCW INTO CONTAINER. ROUTE 1½" RCW TO EACH FROTHING GENERATOR AND REDUCE TO ¾" CONNECTION. PROVIDE 1½" PRV AND TWO BALL ISOLATION VALVES.

✕ PIPE SUPPORT LOCATIONS. SEE DETAIL B/70–S–001.



PLAN
SCALE: 1/2"=1'–0"

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY R. BANYAI
No. C60715
Exp. 12–31–24
CIVIL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

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IF NOT SCALE ACCORDINGLY

SCALE : 1/2"=1'–0"
DRAWN BY : SMB
DESIGNED BY : TS
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DAFT EQUIPMENT
GENERAL ARRANGEMENT PLAN

JOB NUMBER 592–50–22–14
DRAWING NUMBER 70–M–004
SHEET NUMBER 36 OF 89
REVISION

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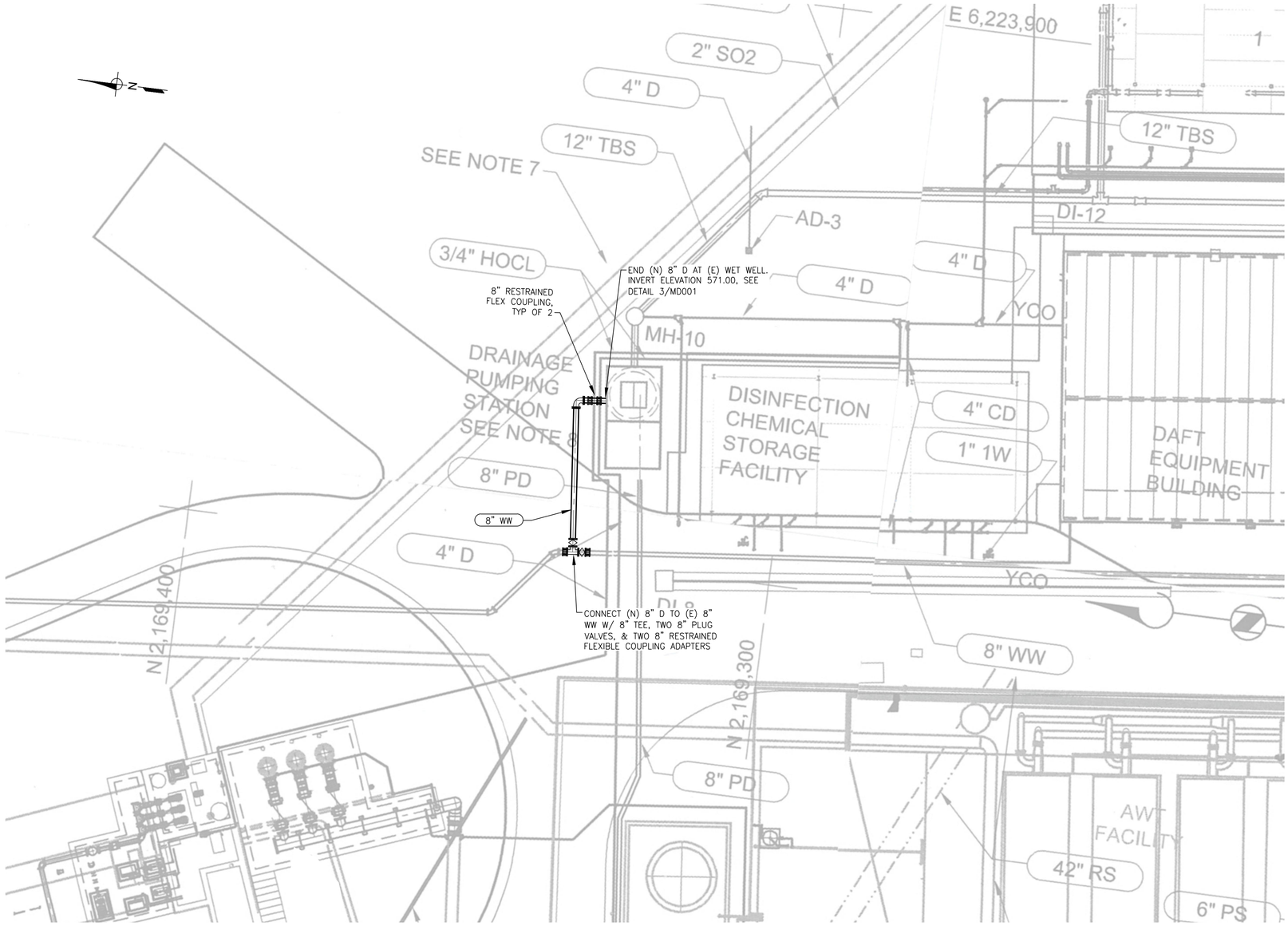

PLAN

SCALE: 1/8"=1'-0"

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY R. BANYAI
No. C60715
Exp. 12-31-24
CIVIL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

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AT FULL SCALE
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SCALE : 1/4"=1'-0"
DRAWN BY : SMB
DESIGNED BY : TS
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

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Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS

DRAIN CONNECTION TO WET WELL

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-M-005
SHEET NUMBER 37 OF 89
REVISION

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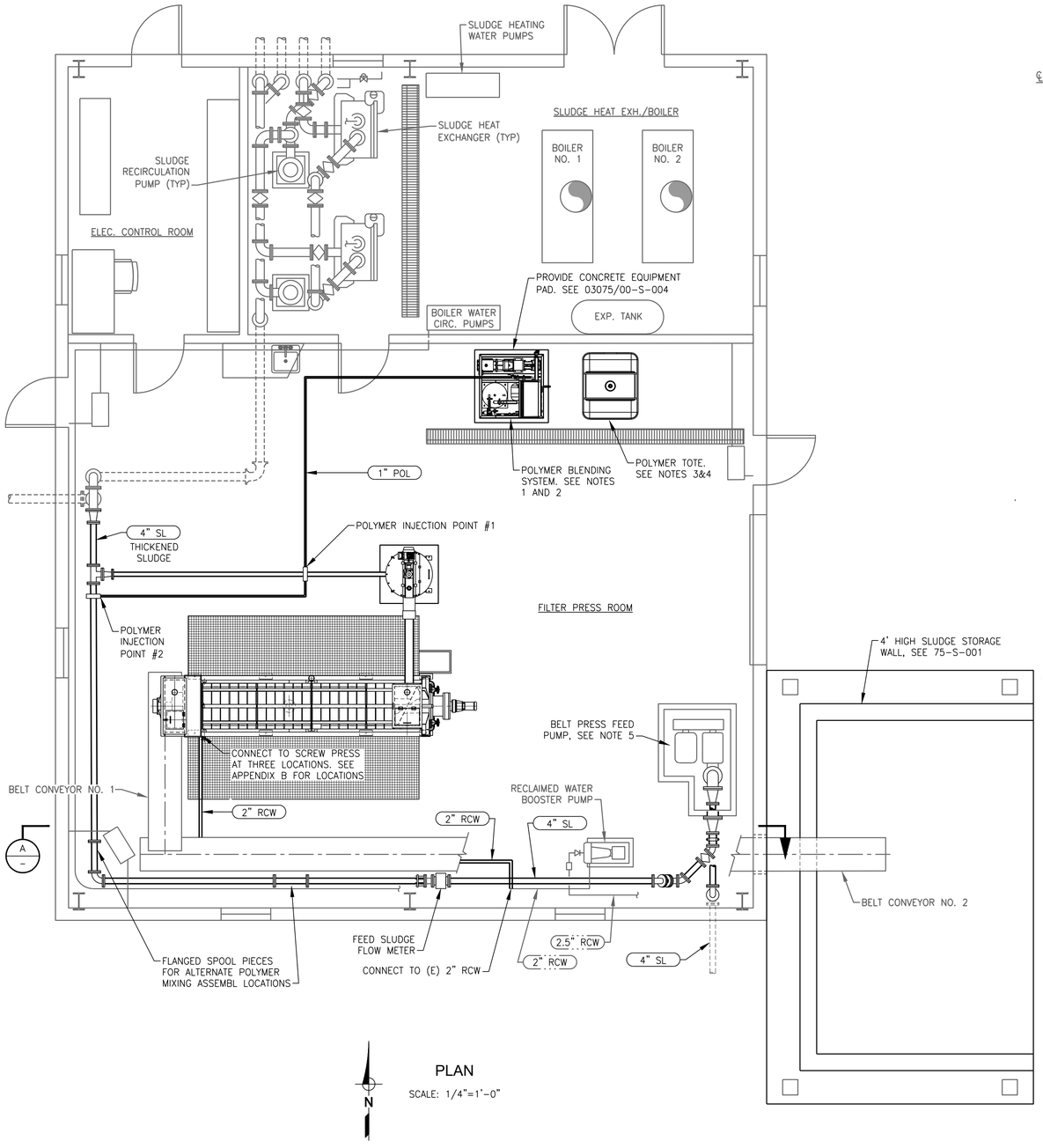
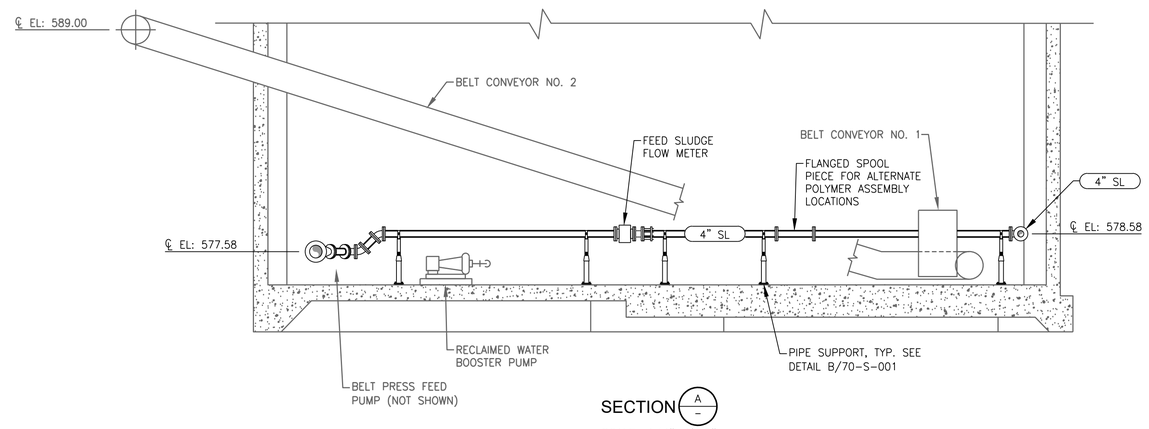


PLAN

SCALE: 1/4"=1'-0"



SECTION A

SCALE: 1/4"=1'-0"

NOTES:

1. CONNECT TO 1" RCW AND ROUTE NEW 1" RCW PIPING TO NEW POLYMER BLENDING SYSTEM.
2. ROUTE 1" POL PIPING OVERHEAD. PROVIDE FOUR 1" ISOLATION BALL VALVES. TWO OF THE 1" BALL VALVES SHALL HAVE EXTENSION STEMS TO ALLOW OPENING AND CLOSING FROM THE FLOOR LEVEL.
3. ROUTE 1" FLEXIBLE PVC HOSE FROM TOTE TO POLYMER BLENDING SYSTEM.
4. POLYMER TOTE SHALL BE PLACED ON EXISTING POLYMER TOTE STAND.
5. ADJUST V-BELT SHEAVES AND PULLEYS FOR A FLOW OF 10 TO 40 GPM.

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY R. BANYAI
No. C60715
Exp. 12-31-24
CIVIL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

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SCALE : 1/4"=1'-0"
DRAWN BY : SMB
DESIGNED BY : TS
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST
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Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS

SLUDGE DEWATERING BUILDING PLAN AND SECTIONS

JOB NUMBER 592-50-22-14
DRAWING NUMBER 75-M-100
SHEET NUMBER 38 OF 89
REVISION

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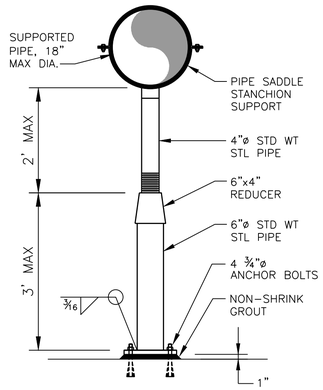
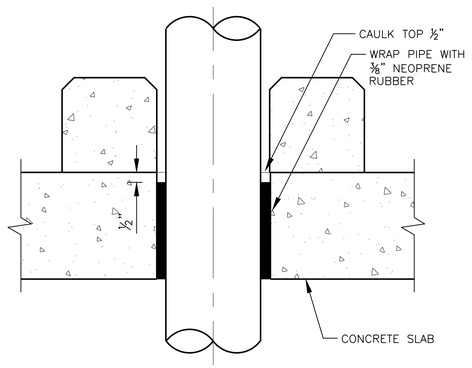


PIPE SUPPORT, FASTENERS, AND ACCESSORIES SHALL BE TYPE 316 STAINLESS STEEL IN WATER BEARING AREAS.

HORIZONTAL PIPE SUPPORT

DETAIL 1 TYP

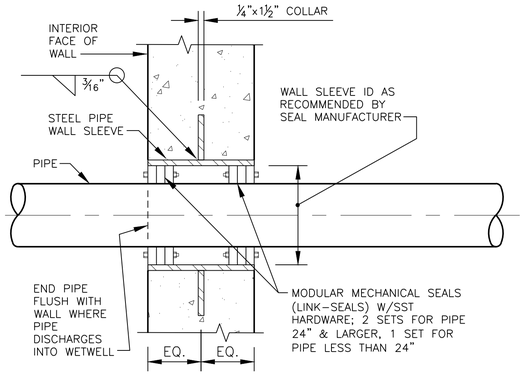
NOT TO SCALE



SLAB PIPE PENETRATION

DETAIL 2 TYP

NOT TO SCALE



NOTE:
6"ø SLEEVES & SMALLER SHALL BE SCH. 40 STEEL PIPE.
8"ø SLEEVES & LARGER SHALL BE ¼" THICK STEEL PIPE.
ALL SLEEVES 2" & LARGER ENTERING PUMP WET WELL SHALL BE STAINLESS STEEL

WALL PENETRATION

DETAIL 3 TYP

NOT TO SCALE

REGISTERED PROFESSIONAL ENGINEER
TIMOTHY R. BANYAI
No. C60715
Exp. 12-31-24
CIVIL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

THIS LINE IS 1 INCH
AT FULL SCALE
IF NOT SCALE ACCORDINGLY

SCALE : AS SHOWN
DRAWN BY : SMB
DESIGNED BY : TS
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MECHANICAL DETAILS

JOB NUMBER 592-50-22-14
DRAWING NUMBER MD001
SHEET NUMBER 39 OF 89
REVISION

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PLAN, ONE LINE AND SCHEMATIC DIAGRAM SYMBOLS

PLAN	ONE LINE	SCHEMATIC	DESCRIPTION
30			DISCONNECT SWITCH, NON-FUSED, CURRENT AS INDICATED
30 F			FUSED DISCONNECT SWITCH, CURRENT AS INDICATED
M	5	MOT	MOTOR (NUMBER INDICATES HP)
OUTLINE	GEN	GEN	GENERATOR
VFD		VFD	VARIABLE FREQUENCY DRIVE
T			POWER TRANSFORMER (WINDING CONNECTION, DELTA OR WYE AS REQUIRED)(RATING AS SHOWN)
			CURRENT TRANSFORMER (RATING AS SHOWN)
			ZERO SEQUENCE CURRENT TRANSFORMER
			POTENTIAL TRANSFORMER (RATING AS SHOWN)
			CIRCUIT BREAKER (3 POLES OR AS INDICATED) NUMBER INDICATES CURRENT INTERRUPTING RATING (MCP-MOTOR CIRCUIT PROTECTOR) NA - NON AUTOMATIC
			MATING CONTACTS, DISCONNECT, OR DRAWOUT
HTR	10	10	HEATER (NUMBER INDICATES KILOWATTS)
	1		CONTACTOR, GENERAL USE (NUMBER INDICATES NEMA SIZE)
	1		MAGNETIC MOTOR STARTER
			THERMAL OVERLOAD ELEMENT
			FUSE, BASIC
	M	M	OPERATING COIL, MOTOR STARTER (M) OR CONTACTOR (C)
		CR ##	RELAY COIL (CR), TIME DELAY (TR), OR CONTACTOR (M)
			CIRCUIT CONTACT, BASIC, NORMALLY OPEN (NO)
			CIRCUIT CONTACT, BASIC, NORMALLY CLOSED (NC)
		TDO	TIME DELAY RELAY CONTACT, ON DELAY (NC)
		TDO	TIME DELAY RELAY CONTACT, OFF DELAY (NO)
		TDC	TIME DELAY RELAY CONTACT, OFF DELAY (NC)
		TDC	TIME DELAY RELAY CONTACT, ON DELAY (NO)
		X H Y	INDICATING LIGHT - PUSH-TO-TEST X = COLOR OF LENSE
			PRESSURE SWITCH, OPENS ON RISING PRESSURE
PS PSH			PRESSURE SWITCH, CLOSES ON RISING PRESSURE
		ETM	ELAPSED TIME METER
			TWISTED SHIELDED PAIR

PLAN, ONE LINE AND SCHEMATIC DIAGRAM SYMBOLS (CONTD)

PLAN	ONE LINE	SCHEMATIC	DESCRIPTION
			THERMAL SWITCH, OPENS ON RISING TEMPERATURE (TH-THERMOSTAT, TS-TEMPERATURE SWITCH)
TS			THERMAL SWITCH, CLOSES ON RISING TEMPERATURE (TH-THERMOSTAT, TS-TEMPERATURE SWITCH)
			LIMIT SWITCH, OPENS ON REACHING LIMIT
LS			LIMIT SWITCH, CLOSES ON REACHING LIMIT
			FLOW SWITCH, OPENS ON INCREASING FLOW
FLS			FLOW SWITCH, CLOSES ON INCREASING FLOW
		LOS	PUSHBUTON SWITCH, CIRCUIT OPENING (LOS-LOCK-OUT-STOP, SP-STOP)
		ST	PUSHBUTTON SWITCH, CIRCUIT CLOSING (ST-START O-OPEN, C-CLOSE, F-FAST, S-SLOW, R-RAISE, L-LOWER, T-TEST)
		R	INDICATING LIGHT (R-RED, G-GREEN, A-AMBER, B-BLUE, W-WHITE, Y-YELLOW, (BLANK)-CLEAR)
		A B (XO)	TWO POSITION SELECTOR SWITCH XO = A POSITION OX = B POSITION
		A B C (XOO)	THREE POSITION SELECTOR SWITCH XOO = A POSITION OXO = B POSITION OOX = C POSITION
			CONDUCTORS, CONNECTED
			CONDUCTORS, NOT CONNECTED
			TERMINATION FOR EXTERNAL CONNECTIONS
			EXISTING EQUIPMENT, STRUCTURES, ETC.
			EQUIPMENT ENCLOSURE
			NON ELECTRICAL EQUIPMENT OR STRUCTURE ABOVE CUTTING PLANE
			EXPOSED CONDUIT
			EXISTING EXPOSED CONDUIT
			UNDERGROUND CONDUIT DUCTBANK
			EXISTING UNDERGROUND CONDUIT DUCTBANK
			CONDUIT STUBUP
			CONDUIT TURNED DOWN
			CONDUIT RUN CONCEALED IN CEILING, FLOOR, OR IN WALLS
			EXISTING CONCEALED CONDUIT
			UTILITY CONDUIT DUCTBANK
			EXISTING UTILITY CONDUIT DUCTBANK
			UTILITY OVERHEAD ELECTRIC
			EXISTING UTILITY OVERHEAD ELECTRIC
			GROUNDING SYSTEM CONDUCTOR
			CHAIN LINK FENCE
			EXISTING CHAIN LINK FENCE
			HOMERUN
			CONDUIT CAP
			MECHANICAL CONNECTION
			MECHANICAL CONNECTION WITH INTERLOCK

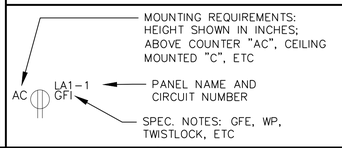
PLAN, ONE LINE AND SCHEMATIC DIAGRAM SYMBOLS (CONTD)

PLAN	ONE LINE	SCHEMATIC	DESCRIPTION
J			JUNCTION FITTING OR BOX
MH			MANHOLE (MH), OR HANDHOLE (HH)
			CONDUIT IDENTIFICATION
			GROUND CONNECTION
			SIMPLEX RECEPTACLE, 120V, 1 PHASE
			DUPLEX RECEPTACLE, 120V, 20A OR AS INDICATED
			4-PLEX RECEPTACLE, 120V, 20A OR AS INDICATED
PE			PHOTOELECTRIC CONTROL
M			SWITCH, MANUAL MOTOR STARTER WITH THERMAL
	A	A	METER: LETTER INDICATES: A-AMMETER, F-FREQUENCY, H-HOUR, PF-POWER FACTOR, V-VOLT, W-WATT, WH-WATTHOUR, ETM-ELAPSED TIME METER
	AS	AS	METER READING SELECTOR SWITCH, LETTER INDICATES: A- AMMETER , V-VOLTMETER
			HEAT TRACE SYSTEM (PLUG IN)
KWH M	KWH M		EXISTING POWER COMPANY UTILITY METERING
PM	PM		OWNER POWER MONITORING METERING
FE	FE		FLOW ELEMENT
FIT	FIT		FLOW TRANSMITTER
LT	LT		LEVEL TRANSMITTER
NS	NS		INTRUSION SWITCH
PI	PI		PRESSURE GAUGE
PIT	PIT		PRESSURE TRANSMITTER
SV	SV		SOLENOID VALVE
a			SINGLE POLE SWITCH LOWER CASE LETTER INDICATES SWITCH LEG

LIGHTING SYSTEM SYMBOLS\SECURITY SYSTEM

PLAN	SCHEMATIC	DESCRIPTION
		LUMINAIRE (OTHER THAN FLUORESCENT), PENDANT OR CEILING MOUNTED.
		LUMINAIRE, WALL MOUNT
		FLOOD LIGHT LUMINAIRE (ARROW INDICATES AIM)
		LUMINAIRE, POLE MOUNT
		LUMINAIRE, ENCLOSED FLUORESCENT PENDANT, SURFACE OR RECESS MOUNT, PER LUMINAIRE SCHEDULE
		EXIT LUMINAIRE, WALL MOUNT
		WALL MOUNTED STROBE
		COMBINATION STROBE/HORN
		SECURITY CAMERA

DRAWING CONVENTION



GROUNDING

PLAN	DESCRIPTION
G	EXISTING GROUNDING
G	GROUND SYSTEM CONNECTION-CADWELD
	EQUIPMENT BOND CONNECTION-BOLTED
	LIGHTNING ROD
	GROUND ROD AND WELL
	GROUND ROD WITHOUT WELL

ABBREVIATIONS (SEE NOTE 2)

SYMBOL	DESCRIPTION
A/R	AS REQUIRED
AFF	ABOVE FINISHED FLOOR
C	CONDUIT
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CT	CURRENT TRANSFORMER
DISC	DISCONNECT
EP	EXPLOSION PROOF
EPB	ELECTRICAL PULL BOX
(E)	EXISTING DEVICE/EQUIPMENT
FS	FLOAT SWITCH
GFCI / GFI	GROUND FAULT CIRCUIT INTERRUPT
GND	GROUND
GRS	GALVANIZED RIGID STEEL CONDUIT
INST	INSTRUMENT
INTR	INTRUSION
ISR	INTRINSICALLY SAFE RELAY
LTG	LIGHTING
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MOV	MOTOR OPERATED VALVE
MS	MOISTURE SENSOR
MTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH
(N)	NEW
NTS	NOT TO SCALE
OT	OVER TEMPERATURE
O/U	OVER/UNDER
PE	PHOTO ELECTRIC CELL
PM	POWER MONITOR
PNL	PANEL
PS	POWER SUPPLY
PT	POTENTIAL TRANSFORMER
PVC	PVC CONDUIT
RCPT	RECEPTACLE
SCE	SOUTHERN CALIFORNIA EDISON
SPST	SINGLE POLE SINGLE THROW
SSS	SOLID STATE STARTER (SOFT STARTER)
ST	SURGE TANK
SST	STAINLESS STEEL
SW	SWITCH
TR	TIME RELAY
TS	TEMPERATURE SWITCH
TYP	TYPICAL
UGND	UNDERGROUND
UON	UNLESS OTHERWISE NOTED
V AC	VOLTS ALTERNATING CURRENT
V DC	VOLTS DIRECT CURRENT
VIF	VERIFY IN FIELD
VM	VIBRATION MONITOR
WP	WEATHERPROOF
XFMR	TRANSFORMER

NOTES:

1. ALL CONTACTS ARE SHOWN IN THE DE-ENERGIZED (SHELF) POSITION. BISTABLE RELAYS ARE SHOWN IN THE RESET POSITION.
2. ABBREVIATIONS OTHER THAN SHOWN PER ANSI/ASME Y1.1
3. NOT ALL SYMBOLS AND ABBREVIATIONS ARE USED.

REGISTERED PROFESSIONAL ENGINEER ZANE E. WILSTERMAN No. E22550 Exp. 12-31-24 ELECTRICAL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

THIS LINE IS 1 INCH AT FULL SCALE IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST Water. Engineered.

Ukiah Utilities A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
SYMBOLS AND ABBREVIATIONS

JOB NUMBER 592-50-22-14
DRAWING NUMBER 00-E-001
SHEET NUMBER 40 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-00-E-001.dwg 7-17-23 09:14:51 AM sbarber

GENERAL NOTES

1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ADOPTED BUILDING CODES (OR CURRENT WHERE NONE HAVE BEEN ADOPTED):

   2019 CALIFORNIA BUILDING CODE (BASED ON THE 2018 INTERNATIONAL BUILDING CODE)

   2019 CALIFORNIA RESIDENTIAL CODE (BASED ON THE 2018 INTERNATIONAL RESIDENTIAL CODE)

   2019 CALIFORNIA ELECTRICAL CODE (BASED ON THE 2018 INTERNATIONAL ELECTRICAL CODE)

   2019 CALIFORNIA MECHANICAL CODE (BASED ON THE 2018 UNIFORM MECHANICAL CODE)

   2019 CALIFORNIA PLUMBING CODE (BASED ON THE 2018 UNIFORM PLUMBING CODE)

   2019 CALIFORNIA FIRE CODE (BASED ON THE 2018 INTERNATIONAL FIRE CODE)

   2019 CALIFORNIA ENERGY CODE

   2019 CALIFORNIA GREEN BUILDING STANDARDS CODE

2. ALL WORK SHALL BE DONE IN A NEAT, WORKMANLIKE, FINISHED AND SAFE MANNER UNDER COMPETENT SUPERVISION.

3. ALL MATERIALS SHALL BE NEW AND OF THE BEST QUALITY, MANUFACTURED IN ACCORDANCE WITH NEMA, ANSI, U.L. OR OTHER APPLICABLE STANDARDS. THE USE OF MANUFACTURER'S NAMES, MODELS AND NUMBERS IS INTENDED TO ESTABLISH STYLE, QUALITY, APPEARANCE, USEFULNESS AND BID PRICE. PROPOSED SUBSTITUTION SHALL BE SUBMITTED IN WRITING AND REVIEWED BY THE ENGINEER PRIOR TO MATERIAL PROCUREMENT.

4. PROTECT ALL ELECTRICAL MATERIAL AND EQUIPMENT INSTALLED UNDER THIS CONTRACT AGAINST DAMAGE BY OTHER TRADES, WEATHER CONDITIONS OR ANY OTHER CAUSES. EQUIPMENT FOUND DAMAGED OR IN OTHER THAN NEW CONDITION WILL BE REJECTED AS DEFECTIVE.

5. LEAVE THE SITE CLEAN. REMOVE ALL DEBRIS, EMPTY CARTONS, TOOLS, CONDUIT, WIRE SCRAPS AND MATERIALS USED IN THE WORK DURING CONSTRUCTION. ALL COMPONENTS SHALL BE FREE OF DUST, GRIT AND FOREIGN MATERIALS BEFORE FINAL ACCEPTANCE OF WORK.

6. ALL WIRE SHALL BE COPPER UNLESS OTHERWISE NOTED.

7. ALL WIRING DEVICES AND ELECTRICAL EQUIPMENT SHALL BE HEAVY DUTY GRADE.

8. VERIFY EXACT LOCATION, MOUNTING HEIGHT AND ELECTRICAL REQUIREMENTS OF ALL EQUIPMENT PRIOR TO ROUGH-IN. PROVIDE ALL ASSOCIATED EQUIPMENT FOR PROPER OPERATION AND FINAL CONNECTIONS TO EQUIPMENT AS INDICATED IN THE PROJECT DOCUMENTS.

9. PROVIDE GROUND WIRE IN ALL RACEWAYS SIZED PER NEC ARTICLE 250.

10. INSTALL 250-LB PULL CORD IN ALL EMPTY CONDUITS INSTALLED AS PART OF THIS PROJECT.

11. ALL CEILINGS AND WALL PENETRATIONS SHALL BE CAULKED OR SEALED TO PRESERVE FIRE RATINGS AND WATERPROOF INTEGRITY. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE GOVERNING INSPECTORS FOR EACH PENETRATION, WHICH SHOW COMPLETE CONFORMANCE TO THE UL LISTING REQUIREMENTS.

12. ALL CONDUITS TO BE GALVANIZED RIGID STEEL (GRS) CONDUIT UNLESS NOTED OTHERWISE ON THE DRAWINGS.

13. THE CONTRACTOR IS TO VERIFY THE CONDITION OF EXISTING INSTALLATIONS/CONDITIONS WHICH MAY AFFECT HIS BID OR WORK. NO ALLOWANCES WILL BE MADE AFTER THE BID FOR EXISTING CONDITIONS OR FOR THE CONTRACTOR'S FAILURE TO VERIFY EXISTING. THE CONTRACTOR IS TO PROVIDE ALL MATERIAL NECESSARY FOR A COMPLETE AND FINISHED PROJECT.

14. THE CONTRACTOR SHALL COORDINATE ALL WORK WITH THE OWNER'S REPRESENTATIVE. ALL ELECTRICAL WORK REQUIRING AN OUTAGE SHALL BE COORDINATED WITH THE OWNER AND THE SERVING UTILITY. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY TEMPORARY ELECTRICAL EQUIPMENT REQUIRED FOR MAINTAINING CONTINUOUS OPERATION OF EMERGENCY AND/OR FIRE ALARM SYSTEMS.

15. MATERIALS AND INSTALLATION SHALL COMPLY WITH REQUIREMENTS FOR INSTALLATION IN SEISMIC ZONE "3".

16. CONTRACTOR SHALL COORDINATE PROJECT DOCUMENTS AND BE AWARE OF THE EXTENT OF WORK REQUIRED PRIOR TO BID. THE CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS THAT MAY AFFECT THE WORK. FAILURE TO DO SO SHALL NOT ENTITLE THE CONTRACTOR TO ADDITIONAL MONIES.

17. CONTRACTOR SHALL NOTIFY AND COORDINATE WITH THE OWNER AND ELECTRICAL ENGINEER FOR ANY DISCREPANCIES PRIOR TO BID.

18. FEEDER/BRANCH CIRCUIT HOMERUNS ARE SHOWN TO TERMINATE AT EXISTING ELECTRICAL PANEL WHERE EXISTING EQUIPMENT IS CONNECTED. FEEDER/BRANCH CIRCUIT HOMERUNS ARE SHOWN TO BE ROUGHED-IN VIA NEW AND/OR EXISTING CONDUIT AS FEASIBLE. PRIOR TO ANY CONNECTIONS, CONTRACTOR SHALL VERIFY, ANALYZE, AND EVALUATE EXISTING ELECTRICAL EQUIPMENT FOR EACH EXISTING FEEDER, BRANCH CIRCUIT WIRE, CONDUIT, ALL EQUIPMENT IF INTENDED TO BE REUSED. FIELD VERIFY EACH EXISTING BRANCH CIRCUIT, LOCATE, IDENTIFY, AND LABEL NEW AND/OR EXISTING BRANCH CIRCUIT TO REMAIN PER N.E.C. COORDINATE WITH ENGINEER FOR ANY DISCREPANCIES.

19. CONTRACTOR SHALL CONFIRM ALL NEW ELECTRICAL EQUIPMENT AT EXISTING BUILDING IS BONDED AND GROUNDED PER N.E.C. ARTICLE 250.

20. ALL NEW CIRCUIT BREAKERS INSTALLED IN EXISTING PANELS SHALL BE COMPATIBLE AND CAPABLE OF WITHSTANDING THE AVAILABLE FAULT CURRENT. NEW CIRCUIT BREAKER SHALL MAINTAIN UL LISTING OF EXISTING ELECTRICAL EQUIPMENT.

REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

REGISTERED PROFESSIONAL ENGINEER
ZANE E. WILSTERMAN
No. E22550
Exp. 12-31-24
ELECTRICAL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

THIS LINE IS 1 INCH
AT FULL SCALE
IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : WGE
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST
Water. Engineered.

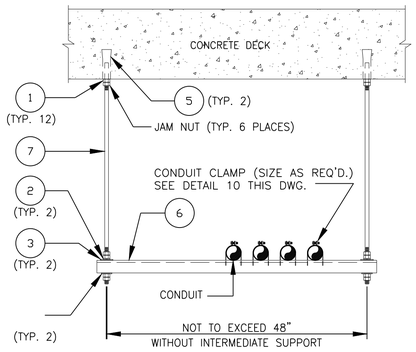
Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
GENERAL NOTES

JOB NUMBER 592-50-22-14
DRAWING NUMBER 00-E-002
SHEET NUMBER 41 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-00-E-002.dwg 7-17-23 09:15:50 AM sbarber

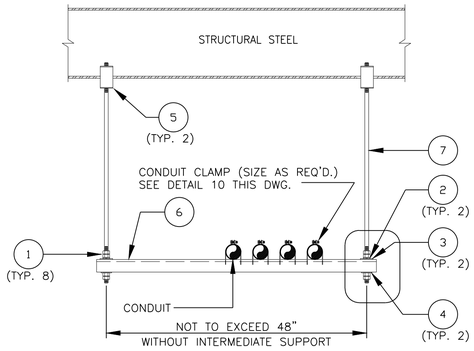
ITEM	QTY.	UNIT	DESCRIPTION FOR CONCRETE MOUNT
1	12	EA	NUT, HEXAGON, 1/2"–13NC
2	2	EA	WASHER, LOCK, 1/2"
3	2	EA	WASHER, FLAT PLATE, 1/2"
4	2	EA	WASHER, FLAT, 1/2"
5	2	EA	ANCHOR, EXPANSION, 1/2"–13NC
6	4	FT	CHANNEL STRUT, HDG, 1 5/8" X 1 5/8"
7	A/R	FT	ROD, ALL THREAD, HDG, 1/2"–13NC



P1 — CONDUIT TRAPEZE FROM MOUNTED TO CONCRETE

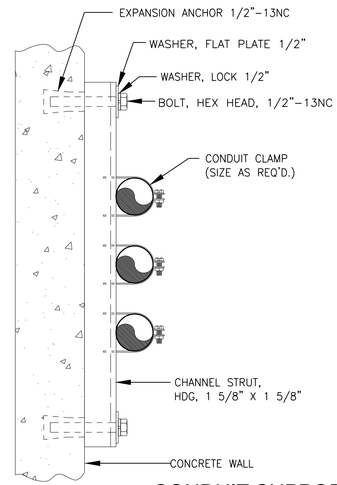
SCALE: NTS

ITEM	QTY.	UNIT	DESCRIPTION FOR STEEL MOUNT
1	12	EA	NUT, HEXAGON, 1/2"–13NC
2	2	EA	WASHER, LOCK, 1/2"
3	2	EA	WASHER, FLAT PLATE, 1/2"
4	2	EA	WASHER, FLAT, 1/2"
5	4	EA	CLAMP, BEAM, FOR 1/2" THREADED ROD
6	A/R	FT	CHANNEL STRUT, HDG, 1 5/8" X 1 5/8"
7	A/R	FT	ROD, ALL THREAD, HDG, 1/2"–13NC



P2 — CONDUIT TRAPEZE FROM MOUNTED TO STEEL

SCALE: NTS

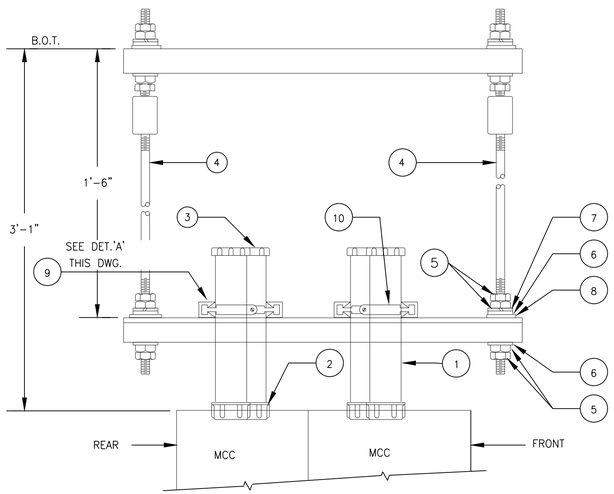


P3 — CONDUIT SUPPORT - CONCRETE WALL OR STRUCTURE

SCALE: NTS

P-03 – CONDUIT CLAMPS	
SIZE	DESCRIPTION
3/4"	CLAMP, CONDUIT, ALUMINUM, 3/4", UNISTRUT #P1112 AL
1"	CLAMP, CONDUIT, ALUMINUM, 1", UNISTRUT #P1113 AL
1 1/2"	CLAMP, CONDUIT, ALUMINUM, 1 1/2", UNISTRUT #P1115 AL
2"	CLAMP, CONDUIT, ALUMINUM, 2", UNISTRUT #P1117 AL
2 1/2"	CLAMP, CONDUIT, ALUMINUM, 2 1/2", UNISTRUT #P1118 AL
3"	CLAMP, CONDUIT, ALUMINUM, 3", UNISTRUT #P1119 AL
4"	CLAMP, CONDUIT, ALUMINUM, 4", UNISTRUT #P1121 AL

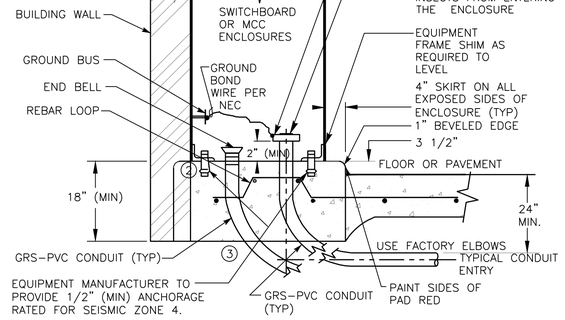
P-03 – U-BOLT CLAMPS	
SIZE	DESCRIPTION
3/4"	U-BOLT, SS, WITH HARDWARE, 3/4"
1"	U-BOLT, SS, WITH HARDWARE, 1"
1 1/2"	U-BOLT, SS, WITH HARDWARE, 1 1/2"
2"	U-BOLT, SS, WITH HARDWARE, 2"
2 1/2"	U-BOLT, SS, WITH HARDWARE, 2 1/2"
3"	U-BOLT, SS, WITH HARDWARE, 3"
4"	U-BOLT, SS, WITH HARDWARE, 4"
5"	U-BOLT, SS, WITH HARDWARE, 5"
6"	U-BOLT, SS, WITH HARDWARE, 6"



P4 — CONDUIT SLEEVE TRAPEZE SUPPORT

SCALE: NTS

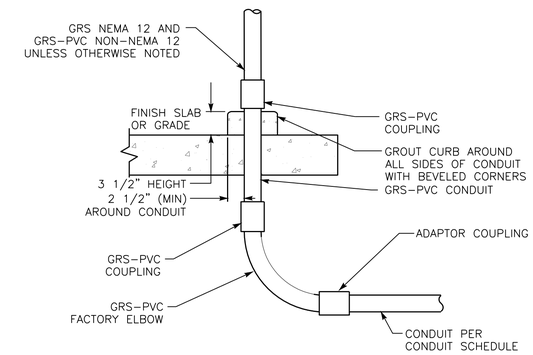
ITEM	QTY.	UNIT	DESCRIPTION FOR 2" CONDUIT
1	0	FT	CONDUIT, STEEL, HDGAF, RIGID, SCH. 40, 2"
2	0	EA	HUB, COND, ZN, 2", MYERS #ST–6
3	0	EA	BUSHING, METALLIC, INSULATED, 2", T&B #1227
4	0	FT	ROD, ALL THREAD, STEEL, 1/2"–13NC, UNISTRUT #HTHR050
5	0	EA	NUT, HEXAGON, SS, 1/2"–13NC, UNISTRUT #HHXN050SS
6	0	EA	WASHER, FLAT, SS, 1/2", UNISTRUT #HFLW050SS
7	0	EA	WASHER, LOCK, SS, 1/2", UNISTRUT #HLKW050SS
8	0	EA	WASHER, FLAT PLATE, SS, 1/2", UNISTRUT #P2864SS
9	0	FT	CHANNEL, HDGAF, 1 5/8" x 1 5/8", UNISTRUT #P1000
10	0	EA	CLAMP, COND, RGS, 2", UNISTRUT #P1117
11	0	LB	ANGLE, HDGS, 1/4" x 1 1/2" x 1 1/2"
12	0	EA	BOLT(SS), HEXHD, 1/2"–13NC,1 1/2" LG, UNI#P1010SS
13	0	EA	NUT, W/SPRING, SS, 1/2"–13NC, UNISTRUT #P1010SS
ITEM	**QTY.**	**UNIT**	**DESCRIPTION FOR 2 1/2" CONDUIT**
1	0	FT	CONDUIT, STEEL, HDGAF, RIGID, SCH. 40, 2 1/2"
2	0	EA	HUB, COND, ZN, 2 1/2", MYERS #ST–7
3	0	EA	BUSHING, METALLIC, INSULATED, 2 1/2", T&B #1228
4	0	FT	ROD, ALL THREAD, STEEL, 1/2"–13NC, UNISTRUT #HTHR050
5	0	EA	NUT, HEXAGON, SS, 1/2"–13NC, UNISTRUT #HHXN050SS
6	0	EA	WASHER, FLAT, SS, 1/2", UNISTRUT #HFLW050SS
7	0	EA	WASHER, LOCK, SS, 1/2", UNISTRUT #HLKW050SS
8	0	EA	WASHER, FLAT PLATE, SS, 1/2", UNISTRUT #P2864SS
9	0	FT	CHANNEL, HDGAF, 1 5/8" x 1 5/8", UNISTRUT #P1000
10	0	EA	CLAMP, COND, RGS, 2 1/2", UNISTRUT #P1118
11	0	LB	ANGLE, HDGS, 1/4" x 1 1/2" x 1 1/2"
12	0	EA	BOLT(SS), HEXHD, 1/2"–13NC,1 1/2" LG, UNI#HHCS050150SS
13	0	EA	NUT, W/SPRING, SS, 1/2"–13NC, UNISTRUT #P1010SS
ITEM	**QTY.**	**UNIT**	**DESCRIPTION FOR 3" CONDUIT**
1	0	FT	CONDUIT, STEEL, HDGAF, RIGID, SCH. 40, 3"
2	0	EA	HUB, COND, ZN, 3", MYERS #ST–8
3	0	EA	BUSHING, METALLIC, INSULATED, 3", T&B #1229
4	0	FT	ROD, ALL THREAD, STEEL, 1/2"–13NC, UNISTRUT #HTHR050
5	0	EA	NUT, HEXAGON, SS, 1/2"–13NC, UNISTRUT #HHXN050SS
6	0	EA	WASHER, FLAT, SS, 1/2", UNISTRUT #HFLW050SS
7	0	EA	WASHER, LOCK, SS, 1/2", UNISTRUT #HLKW050SS
8	0	EA	WASHER, FLAT PLATE, SS, 1/2", UNISTRUT #P2864SS
9	0	FT	CHANNEL, HDGAF, 1 5/8" x 1 5/8", UNISTRUT #P1000
10	0	EA	CLAMP, COND, RGS, 3", UNISTRUT #P1119
11	0	LB	ANGLE, HDGS, 1/4" x 1 1/2" x 1 1/2"
12	0	EA	BOLT(SS), HEXHD, 1/2"–13NC,1 1/2" LG, UNI#HHCS050150SS
13	0	EA	NUT, W/SPRING, SS, 1/2"–13NC, UNISTRUT #P1010SS



NOTES: (1) CONCRETE PAD ABOVE FLOOR TO BE POURED AFTER MAIN PAD HAS BEEN POURED. PAD ABOVE TO BE CLASS "A" CONCRETE COMPOSITION ACCURATELY LEVEL TO WITHIN 1/16". REBAR TO BE #4@12" CROSSWAYS AND VERTICALS EVERY 6" MINIMUM OR AS CALLED OUT ON STRUCTURAL DRAWINGS.

P5 — EQUIPMENT CONCRETE PAD DETAIL

SCALE: NTS



P6 — EXPOSED CONDUIT TRANSITION DETAIL

SCALE: NTS

REGISTERED PROFESSIONAL ENGINEER
ZANE E. WILSTERMAN
No. E22550
Exp. 12-31-24
ELECTRICAL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

THIS LINE IS 1 INCH
AT FULL SCALE
IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

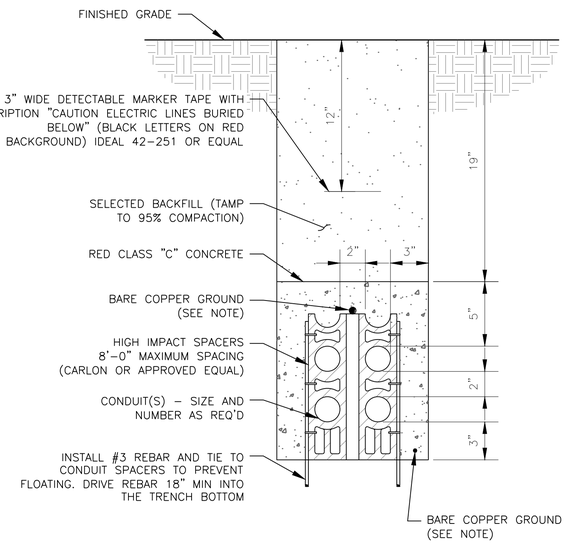
WEST YOST
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
ELECTRICAL DETAILS 1

JOB NUMBER 592-50-22-14
DRAWING NUMBER 00-E-003
SHEET NUMBER 42 OF 89
REVISION

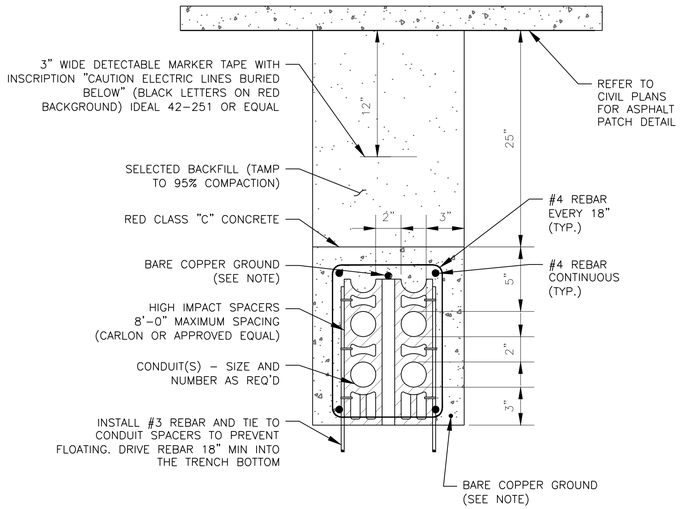
W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-00-E-003.dwg 7-17-23 09:16:36 AM sbarber



NOTES:
1. GROUND CONDUCTOR SHALL RUN CONTINUOUSLY THROUGH MANHOLES AND SHALL CONTINUE FROM DUCTBANK INTO SWITCHGEAR OR BUILDING GROUNDING SYSTEM AND SHALL BE BONDED TO EACH RIGID METAL CONDUIT. SIZE TO BE #4/0 UNLESS OTHERWISE INDICATED ON PLANS.
2. ALL DIMENSIONS ARE MINIMUM.

DB1 TYP — DUCTBANK DETAIL - CONCRETE ENCLOSED

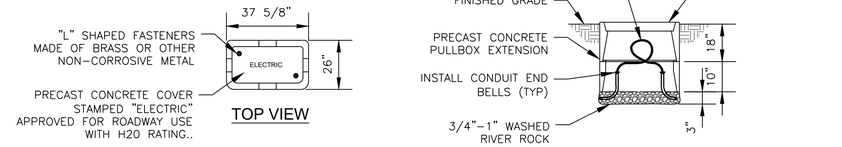
SCALE: NTS



NOTES:
1. GROUND CONDUCTOR SHALL RUN CONTINUOUSLY THROUGH MANHOLES AND SHALL CONTINUE FROM DUCTBANK INTO SWITCHGEAR OR BUILDING GROUNDING SYSTEM AND SHALL BE BONDED TO EACH RIGID METAL CONDUIT. SIZE TO BE #4/0 UNLESS OTHERWISE INDICATED ON PLANS.
2. REINFORCED DUCTBANK IS REQUIRED BELOW ROADWAYS AND WHERE INDICATED ON DRAWINGS.
3. ALL DIMENSIONS ARE MINIMUM.

DB2 TYP — DUCTBANK DETAIL - CONCRETE ENCLOSED-UNDER ROADWAYS

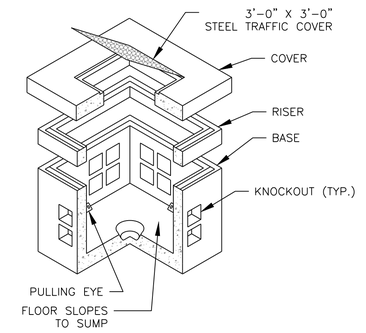
SCALE: NTS



JB1 TYP — UNDERGROUND JUNCTION BOX DETAIL (TYPICAL)

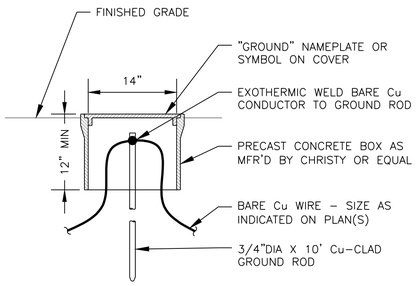
SCALE: NTS

NOTES:
1. 4' x 4' x 4' MINIMUM INSIDE DIMENSIONS. INSTALL A GROUND ROD AND CONNECT TO DUCTBANK GROUND. TRAIN CABLES AROUND INTERIOR PERIMETER ON CABLE RACKS.
2. PRE-CAST MFG. CO. PART #E444.
3. PROVIDE 18" OF DRAINAGE GRAVEL BELOW THE VAULT/BOX.



H1 TYP — CONCRETE HANDHOLE WITH HINGED COVER

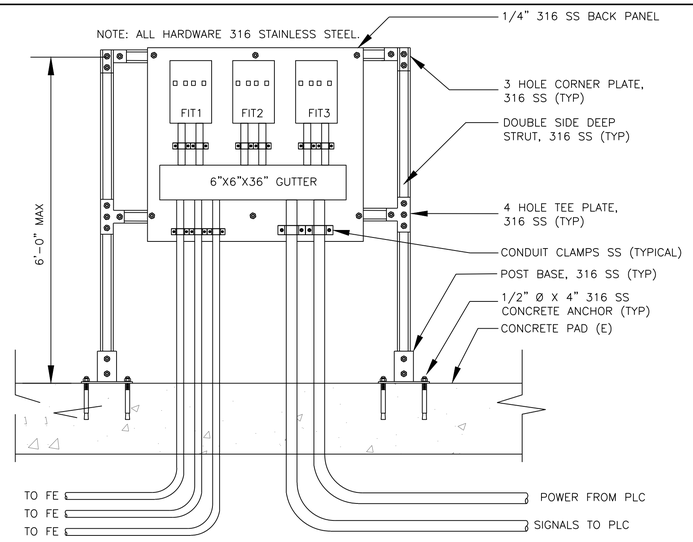
SCALE: NTS



NOTES:
1. COVER SHALL BE STEEL. IF LOCATED IN TRAFFIC AREA, COVER SHALL BE H-20 RATED.
2. DIMENSIONS INDICATED ABOVE ARE MINIMUM REQUIREMENTS.
3. THIS DETAIL APPLIES IN ALL CASES WHETHER SPECIFICALLY REFERRED TO OR NOT.

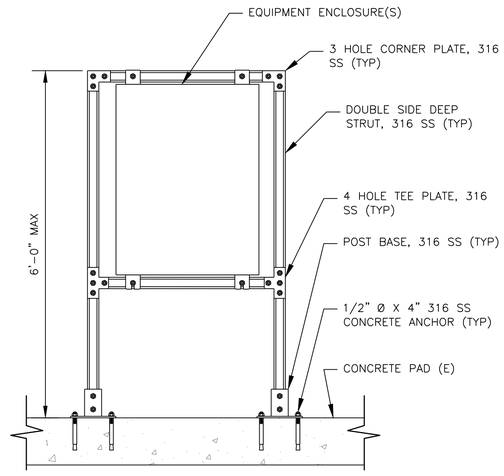
GND TYP — GROUND ROD AND WELL DETAIL (TYPICAL)

SCALE: NTS



RD1 — TYP. INSTRUMENT RACK WITH TRANSMITTERS

SCALE: NTS



RD2 TYP — EQUIPMENT RACK ON PAD DETAIL - UNCLASSFIED AREAS

SCALE: NTS

REGISTERED PROFESSIONAL ENGINEER — ZANE E. WILSTERMAN — No. E22550 — Exp. 12-31-24 — ELECTRICAL — STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

THIS LINE IS 1 INCH AT FULL SCALE IF NOT SCALE ACCORDINGLY
SCALE : NONE
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

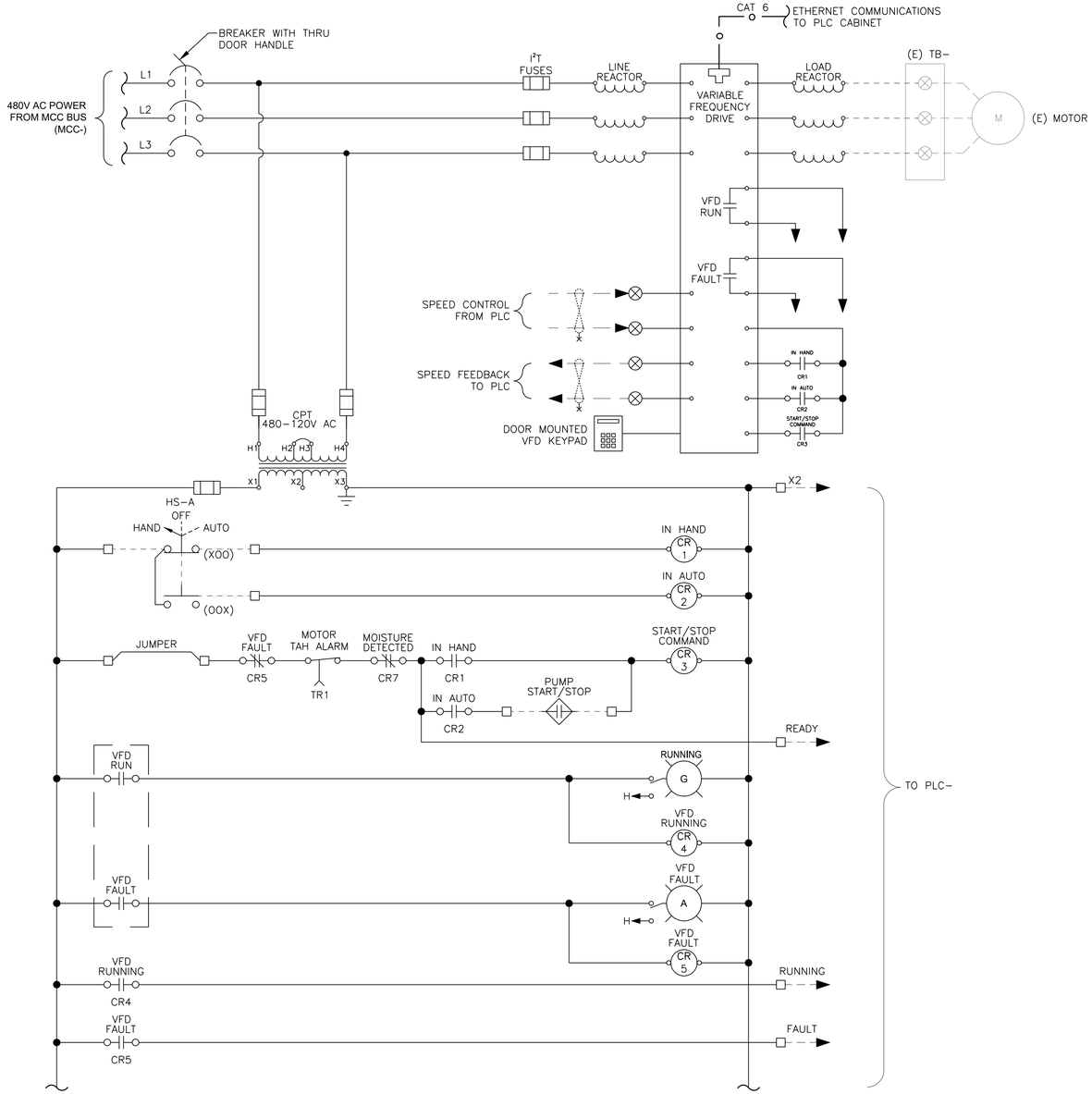
WEST YOST — Water. Engineered.

Ukiah Utilities — A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
ELECTRICAL DETAILS 2

JOB NUMBER 592-50-22-14
DRAWING NUMBER 00-E-004
SHEET NUMBER 43 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-00-E-004.dwg 7-17-23 09:17:32 AM sbarber



EQUIP NO	DESCRIPTION	HS-A	TB-	TSH-	ME-	MCC-	PLC-
P27201	PRIMARY SCUM PUMP 1	HS27201	TB27201	TSH27201	ME27201	MCC31291	PLC31299
P27202	PRIMARY SCUM PUMP 2	HS27202	TB27202	TSH27202	ME27202	MCC31292	PLC31299
P27203	PRIMARY SCUM PUMP 3	HS27203	TB27203	TSH27203	ME27203	MCC31293	PLC31299
P27204	PRIMARY SCUM PUMP 4	HS27204	TB27204	TSH27204	ME27204	MCC31294	PLC31299
P93111	POND 1 WASHWATER PUMP 1	HS93111	TB93111	TSH93111	ME93111	MCC12191	PLC12199
P93112	POND 1 WASHWATER PUMP 2	HS93112	TB93112	TSH93112	ME93112	MCC12192	PLC12199
P93121	POND 2 WASHWATER PUMP 1	HS93121	TB93121	TSH93121	ME93121	MCC12191	PLC12199
P93122	POND 2 WASHWATER PUMP 2	HS93122	TB93122	TSH93122	ME93122	MCC12192	PLC12199

REGISTERED PROFESSIONAL ENGINEER
JANE E. WILSTERMAN
No. E22550
Exp. 12-31-24
ELECTRICAL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

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WEST YOST
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A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MOTOR CONTROL SCHEMATICS

JOB NUMBER 592-50-22-14
DRAWING NUMBER 00-E-005
SHEET NUMBER 44 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-00-E-005.dwg 7-17-23 09:18:28 AM sbarber

CONDUIT & CONDUCTOR SCHEDULE

TAG	SIZE	POWER	CNTRL	GND	FROM	TO	REMARKS
FLOW INSTRUMENTS/ FIELD POWER AREA "70"							
C70-00-01	1"		6#14	1#14	PLC70299	FLOW METER TRANSMITTERS WEST	120VAC POWER VIA EXISTING CONDUIT XC70299C, HH70-S1/HH70-S1A (RENAME CONDUIT WITH NEW CONDUIT TAG NUMBER)
C70-00-02	1"		3TSP IC	1#14	PLC70299	FLOW METER TRANSMITTERS WEST	VIA EXISTING CONDUIT XC70299D, HH70-S1/HH70-S1A (RENAME CONDUIT WITH NEW CONDUIT TAG NUMBER)
C70-00-03	3/4"		MFR CABLE	1#14	FLOW METER TRANSMITTERS WEST	PIPE FLOW TUBE DEVICES	FIELD WIRING
C70-00-04	3/4"		MFR CABLE	1#14	FLOW METER TRANSMITTERS WEST	PIPE FLOW TUBE DEVICES	FIELD WIRING
C70-00-05	3/4"		MFR CABLE	1#14	FLOW METER TRANSMITTERS WEST	PIPE FLOW TUBE DEVICES	FIELD WIRING
C70-00-06	1"		6#14	1#14	PLC-70299	POWER FLOW METERS EAST	120VAC POWER VIA EXISTING CONDUIT XC70299C, HH70-S1/HH70-S1A (RENAME CONDUIT WITH NEW CONDUIT TAG NUMBER)
C70-00-07	1"		3TSP IC	1#14	PLC-70299	FLOW METER TRANSMITTERS EAST	VIA EXISTING CONDUIT XC70299D, HH70-S1/HH70-S1A (RENAME CONDUIT WITH NEW CONDUIT TAG NUMBER)
C70-00-08	3/4"		MFR CABLE	1#14	FLOW METER TRANSMITTERS EAST	PIPE FLOW TUBE DEVICES	FIELD WIRING
C70-00-09	3/4"		MFR CABLE	1#14	FLOW METER TRANSMITTERS EAST	PIPE FLOW TUBE DEVICES	FIELD WIRING
C70-00-10	3/4"		MFR CABLE	1#14	FLOW METER TRANSMITTERS EAST	PIPE FLOW TUBE DEVICES	FIELD WIRING
P70-00-01	3/4"	2#12		1#12	HH70-P1	HH70-P1A/ LP-1	RE-PURPOSED LIGHTING CIRCUIT (RENAME CONDUIT WITH NEW CONDUIT TAG NUMBER)
P70-00-02	3/4"	2#12		1#12	HH70-P1	HH70-P1A/ LP-2	RE-PURPOSED LIGHTING CIRCUIT (RENAME CONDUIT WITH NEW CONDUIT TAG NUMBER)
SAF/ FROTH GENERATOR SKID. NO1 "70"							
P70-01-01	1"	3#10		1#10	MCC70291	FROTH GENERATOR NO.1 DISC SW	VIA EXISTING CONDUIT P70221A, HH70-P1/HH70-P1A (RENAME CONDUIT WITH NEW CONDUIT TAG NUMBER)
P70-01-02	1"	3#10		1#10	FROTH GENERATOR NO.1 DISC SW	FROTH GENERATOR NO.1	
P70-01-03	1"	3#12		1#12	FROTH GENERATOR NO.1	SAF NO.1 FLOC MIXER	
C70-01-01	1"		4#14	1#14	PLC70299	FROTH GENERATOR NO.1	VIA EXISTING CONDUIT C70221, C70221A HH70-P1/HH70-S1A (RENAME CONDUIT WITH NEW CONDUIT TAG NUMBER)
C70-01-02	1"	PULL STRING			PLC70299	FROTH GENERATOR NO.1	SPARE CONDUIT
SAF/ FROTH GENERATOR SKID. NO2 "70"							
P70-02-01	1"	3#10		1#10	MCC70292	FROTH GENERATOR NO.2 DISC SW	VIA EXISTING CONDUIT P70222A, HH70-P1/HH70-P1A (RENAME CONDUIT WITH NEW CONDUIT TAG NUMBER)
P70-02-02	1"	3#10		1#10	FROTH GENERATOR NO.2 DISC SW	FROTH GENERATOR NO.2	
P70-02-03	1"	3#12		1#12	FROTH GENERATOR NO.2	SAF NO.2 FLOC MIXER	
C70-02-01	1"		4#14	1#14	PLC70299	SAF/FROTH GENERATOR CONTROL PANEL #2	VIA EXISTING CONDUIT C70222, C70222A HH70-P1/HH70-S1A (RENAME CONDUIT WITH NEW CONDUIT TAG NUMBER)
C70-02-02	1"	PULL STRING			PLC70299	SAF/FROTH GENERATOR CONTROL PANEL #2	SPARE CONDUIT
CONNEX BUILDING XFRM & PANEL 70273A "70"							
P70-03-01	1"	2#8		1#10	MCC70293	TRANSFORMER T70273 DISC SW	VIA EXISTING CONDUIT P70223A, HH70-P1/HH70-P1A (RENAME CONDUIT WITH NEW CONDUIT TAG NUMBER)
P70-03-02	1"	2#8		1#10	TRANSFORMER T70273 DISC SW	TRANSFORMER T70273	
P70-03-03	1½"	3#2		1#4	TRANSFORMER T70273	240V PNL70273A	
SAF POLYMER SYSTEM NO.1 AREA "70"							
P70-04-01	3/4"	2-#10		1#10	208V PNL70271 IN MCC70291	SAF POLYMER #1 CONTROL PANEL	CKT 31
C70-04-01	1"		8#14	1#14	SAF POLYMER #1 CONTROL PANEL	PLC70299	IN REMOTE, RUN, FAIL, START/STOP CMD SIGNALS
C70-04-02	1"		2TSP		SAF POLYMER #1 CONTROL PANEL	PLC70299	SPEED CONTROL, SPEED FEEDBACK
SAF POLYMER SYSTEM NO.2 AREA "70"							
P70-05-01	3/4"	2-#10		1#10	208V PNL70272 IN MCC70292	SAF POLYMER #2 CONTROL PANEL	CKT 31
C70-05-01	1"		8#14	1#14	SAF POLYMER #2 CONTROL PANEL	PLC70299	IN REMOTE, RUN, FAIL, START/STOP CMD SIGNALS
C70-05-02	1"		2TSP		SAF POLYMER #2 CONTROL PANEL	PLC70299	SPEED CONTROL, SPEED FEEDBACK
WASHWATER RECOVERY POND AREA "12"							
P12-01-01	1"	3#10		1#10	MCC12191	VFD93111	IN POWER GENERATION BUILDING
P12-01-02	1-1/2"	3/C#10 VFD CABLE		1#10	VFD93111	TB93111	VIA 12HH-1, 12HH-2
C12-01-01	1"	2TSP	1CAT6	1#12	VFD93111	PLC12199	SPEED CONTROL, SPEED FEEDBACK, ETHERNET COMMS
C12-01-02	1"		10#14	1#14	VFD93111	PLC12199	START/STOP CMD, READY, RUN, LEAK, OL, HIGH TEMP
C12-01-03	1"		12/C#14	1#14	VFD93111	TB93111	VIA 12HH-1, 12HH-2
P12-02-01	1"	3#10		1#10	MCC12191	VFD93121	IN POWER GENERATION BUILDING
P12-02-02	1-1/2"	3/C#10 VFD CABLE		1#10	VFD93121	TB93121	VIA 12HH-1, 12HH-2
C12-02-01	1"	2TSP	1CAT6	1#12	VFD93121	PLC12199	SPEED CONTROL, SPEED FEEDBACK, ETHERNET COMMS
C12-02-02	1"		10#14	1#14	VFD93121	PLC12199	START/STOP CMD, READY, RUN, LEAK, OL, HIGH TEMP
C12-02-03	1"		12/C#14	1#14	VFD93121	TB93121	VIA 12HH-1, 12HH-2
P12-03-02	1"	3#10		1#10	MCC12192	VFD93112	IN POWER GENERATION BUILDING
P12-03-02	1-1/2"	3/C#10 VFD CABLE		1#10	VFD93112	TB93112	VIA 12HH-1, 12HH-2
C12-03-01	1"	2TSP	1CAT6	1#12	VFD93112	PLC12199	SPEED CONTROL, SPEED FEEDBACK, ETHERNET COMMS
C12-03-02	1"		10#14	1#14	VFD93112	PLC12199	START/STOP CMD, READY, RUN, LEAK, OL, HIGH TEMP

CONDUIT & CONDUCTOR SCHEDULE

TAG	SIZE	POWER	CNTRL	GND	FROM	TO	REMARKS
C12-03-03	1"		12/C#14	1#14	VFD93112	TB93112	VIA 12HH-1, 12HH-2
P12-04-01	1"	3#10		1#10	MCC12192	VFD93122	IN POWER GENERATION BUILDING
P12-04-02	1-1/2"	3/C#10 VFD CABLE		1#10	VFD93122	TB93122	VIA 12HH-1, 12HH-2
C12-04-01	1"	2TSP	1CAT6	1#12	VFD93122	PLC12199	SPEED CONTROL, SPEED FEEDBACK, ETHERNET COMMS
C12-04-02	1"		10#14	1#14	VFD93122	PLC12199	START/STOP CMD, READY, RUN, LEAK, OL, HIGH TEMP
C12-04-03	1"		12/C#14	1#14	VFD93122	TB93122	VIA 12HH-1, 12HH-2
P12-05-01	2"	PULL STRING			POWER GENERATION BLDG.	12HH-2	SPARE CONDUIT FOR FUTURE USE (VIA 12HH-1)
C12-05-01	2"	PULL STRING			POWER GENERATION BLDG.	12HH-2	SPARE CONDUIT FOR FUTURE USE (VIA 12HH-1)
CLARIFIER AREA "31"							
P31-01-01	1"	3#10		1#10	MCC31291	VFD27201	IN TRICKLING FILTER ELECTRICAL BUILDING
P31-01-02	1"	3/C#10 VFD CABLE		1#10	VFD27201	MCC31291	POWER OUTPUT FROM VFD TO MCC
P31-01-03	1"	3/C#10 VFD CABLE		1#10	MCC31291	TB27201	VIA EXISTING CONDUIT P27201A, HH27-P2 (RENAME CONDUIT WITH NEW TAG NUMBER)
C31-01-01	1"	2TSP	1CAT6	1#12	VFD27201	PLC31299	SPEED CONTROL, SPEED FEEDBACK, ETHERNET COMMS
C31-01-02	1"		10#14	1#14	VFD27201	PLC31299	START/STOP CMD, READY, RUN, LEAK, OL, HIGH TEMP
C31-01-03	1"		12/C#14	1#14	VFD27201	MCC31291	RUN CONTINUOUS BETWEEN VFD27201 & TB27201
C31-01-04	1"		12/C#14	1#14	MCC31291	TB27201	VIA EXISTING CONDUIT C27201A, HH27-S2 (RENAME CONDUIT WITH NEW TAG NUMBER)
P31-02-01	1"	3#10		1#10	MCC31292	VFD27202	IN TRICKLING FILTER ELECTRICAL BUILDING
P31-02-02	1"	3/C#10 VFD CABLE		1#10	VFD27202	MCC31292	POWER OUTPUT FROM VFD TO MCC
P31-02-03	1"	3/C#10 VFD CABLE		1#10	MCC31292	TB27202	VIA EXISTING CONDUIT P27202A, HH27-P2 (RENAME CONDUIT WITH NEW TAG NUMBER)
C31-02-01	1"	2TSP	1CAT6	1#12	VFD27202	PLC31299	SPEED CONTROL, SPEED FEEDBACK, ETHERNET COMMS
C31-02-02	1"		10#14	1#14	VFD27202	PLC31299	START/STOP CMD, READY, RUN, LEAK, OL, HIGH TEMP
C31-02-03	1"		12/C#14	1#14	VFD27202	MCC31292	RUN CONTINUOUS BETWEEN VFD27202 & TB27202
C31-02-04	1"		12/C#14	1#14	MCC31292	TB27202	VIA EXISTING CONDUIT C27202A, HH27-S2 (RENAME CONDUIT WITH NEW TAG NUMBER)
P31-03-01	1"	3#10		1#10	MCC31293	VFD27203	IN TRICKLING FILTER ELECTRICAL BUILDING
P31-03-02	1"	3/C#10 VFD CABLE		1#10	VFD27203	MCC31293	POWER OUTPUT FROM VFD TO MCC
P31-03-03	1"	3/C#10 VFD CABLE		1#10	MCC31293	TB27203	VIA EXISTING CONDUIT P27203A, HH27-P2 (RENAME CONDUIT WITH NEW TAG NUMBER)
C31-03-01	1"	2TSP	1CAT6	1#12	VFD27203	PLC31299	SPEED CONTROL, SPEED FEEDBACK, ETHERNET COMMS
C31-03-02	1"		10#14	1#14	VFD27203	PLC31299	START/STOP CMD, READY, RUN, LEAK, OL, HIGH TEMP
C31-03-03	1"		12/C#14	1#14	VFD27203	MCC31293	RUN CONTINUOUS BETWEEN VFD27203 & TB27203
C31-03-04	1"		12/C#14	1#14	MCC31293	TB27203	VIA EXISTING CONDUIT C27203A, HH27-S2 (RENAME CONDUIT WITH NEW TAG NUMBER)
P31-04-01	1"	3#10		1#10	MCC31294	VFD27204	IN TRICKLING FILTER ELECTRICAL BUILDING
P31-04-02	1"	3/C#10 VFD CABLE		1#10	VFD27204	MCC31294	POWER OUTPUT FROM VFD TO MCC
P31-04-03	1"	3/C#10 VFD CABLE		1#10	MCC31294	TB27204	VIA EXISTING CONDUIT P27204A, HH27-P2 (RENAME CONDUIT WITH NEW TAG NUMBER)
C31-04-01	1"	2TSP	1CAT6	1#12	VFD27204	PLC31299	SPEED CONTROL, SPEED FEEDBACK, ETHERNET COMMS
C31-04-02	1"		10#14	1#14	VFD27204	PLC31299	START/STOP CMD, READY, RUN, LEAK, OL, HIGH TEMP
C31-04-03	1"		12/C#14	1#14	VFD27204	MCC31294	RUN CONTINUOUS BETWEEN VFD27204 & TB27204
C31-04-04	1"		12/C#14	1#14	MCC31294	TB27204	VIA EXISTING CONDUIT C27204A, HH27-S2 (RENAME CONDUIT WITH NEW TAG NUMBER)
DEWATERING AREA "75"							
P75-01-01	3/4"	3#10		1#10	PANEL "B"	POLYMETER SYSTEM	
C75-01-01	3/4"	8#14		1#14	MCP75001	LCP75020	AUTO, RUNNING, TROUBLE, START/STOP
C75-01-02	3/4"		TSP		MCP75001	LCP75020	
P75-02-01	1-1/2"	3#4		1#8	MCC-D	MCP75001	
P75-02-02	1"	3#8		1#10	MCP75001	(E) P75010	
P75-02-03	3/4"	3#12		1#12	MCP75001	M75001	
P75-02-04	3/4"	3#12		1#12	MCP75001	M75030	
P75-02-05	3/4"	3#12		1#12	MCP75001	(E) C75040	
P75-02-06	3/4"	3#12		1#12	MCP75001	(E) C75050	
C75-02-01	1"		CAT6		MCP75001	PLC75001	
C75-02-02	3/4"	2#14		1#14	MCP75001	FLOC LE 75-001	DISCRETE SIGNAL
C75-02-03	3/4"				MCP75001	SCREW PRESS	ANALOG SIGNAL TO LEVEL TRANSMITTER
C75-02-04	3/4"	2#14		1#14	MCP75001	SLUDGE FLOWMETER POWER	120V FROM MCP75001
C75-02-05	3/4"		TSP		MCP75001	FIT75010	
C75-02-06	3/4"	2#14		1#14	MCP75001	(E)SLUDGE FEED PUMP	TEMPERATURE SWITCH
** INSTALL IN NIPPLES/WIRE WAYS INDICATED IN ELEVATION(S).							

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THICKENING AND DEWATERING IMPROVEMENTS
CONDUIT AND CONDUCTOR SCHEDULE

JOB NUMBER 592-50-22-14
DRAWING NUMBER 00-E-006
SHEET NUMBER 45 OF 89
REVISION

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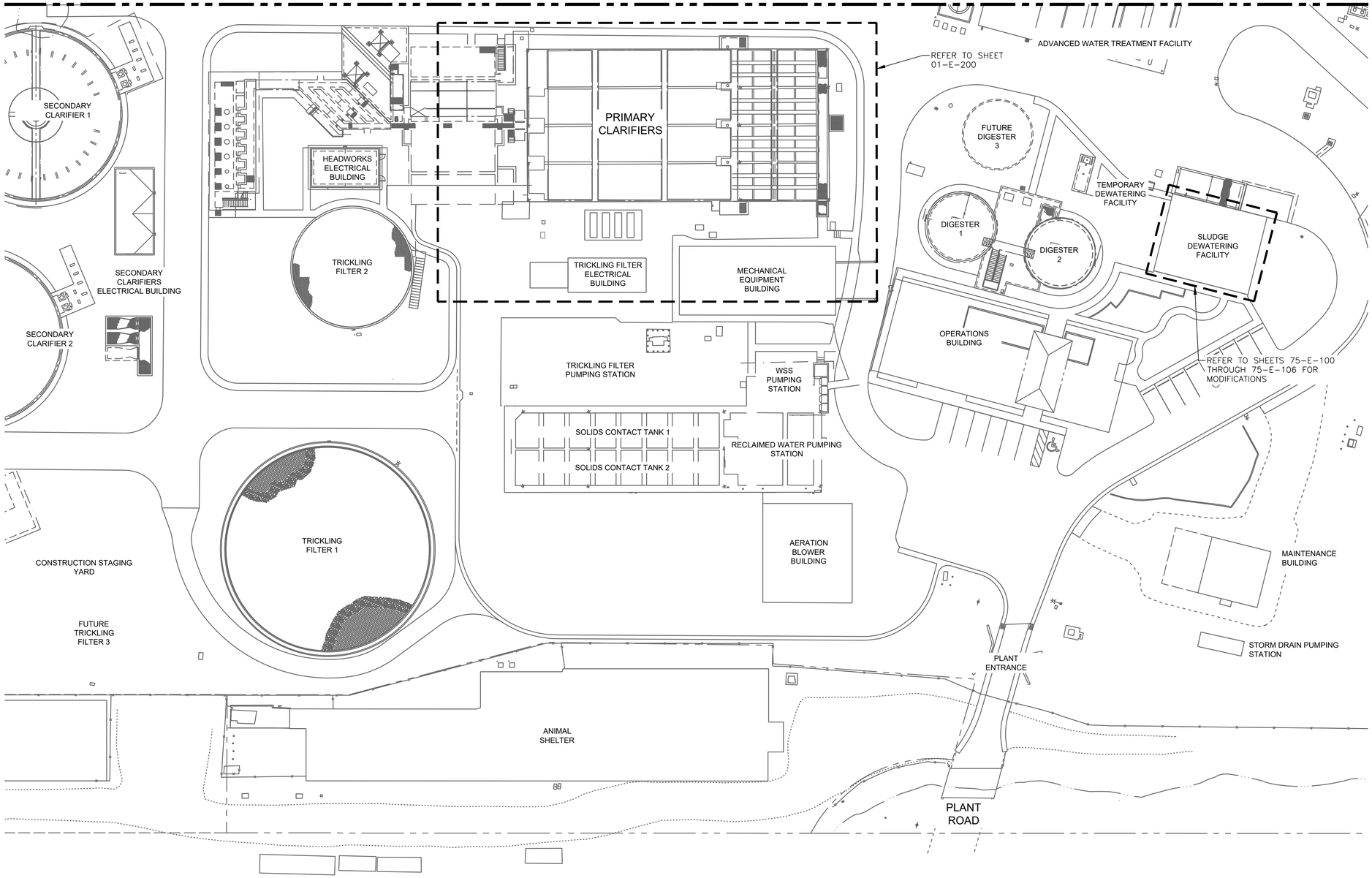
MATCHLINE -REFER TO 01-E-101 FOR CONTINUATION



GENERAL NOTES

1. REFER TO DRAWING 00-E-003/004 FOR ELECTRICAL INSTALLATION DETAILS.
2. REFER TO DRAWING 00-E-006 FOR CONDUIT AND CABLE REQUIREMENTS.
3. FOLLOW ALL LOCKOUT/TAGOUT AND ARC FLASH SAFETY PROCEDURES.

ELECTRICAL SITE 1 OF 2 AREA PLAN

SCALE: 1"=30'-0"

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-01-E-100.dwg 7-17-23 09:19:36 AM sbarber

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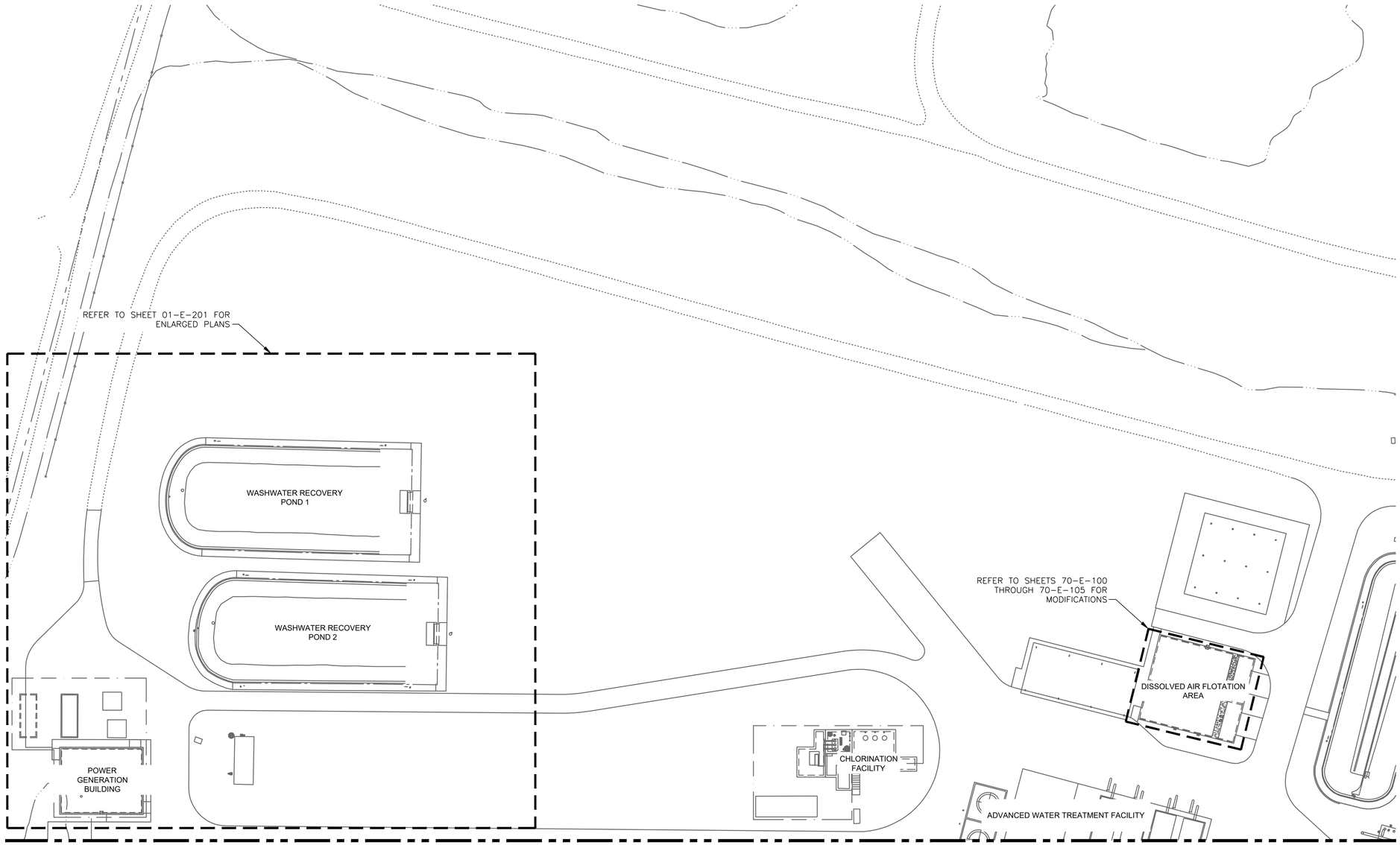
THICKENING AND DEWATERING IMPROVEMENTS
ELECTRICAL SITE 1 OF 2 AREA PLAN

JOB NUMBER 592-50-22-14
DRAWING NUMBER 01-E-100
SHEET NUMBER 46 OF 89
REVISION

GENERAL NOTES

1. REFER TO DRAWING 00-E-003/004 FOR ELECTRICAL INSTALLATION DETAILS.
2. REFER TO DRAWING 00-E-006 FOR CONDUIT AND CABLE REQUIREMENTS.
3. FOLLOW ALL LOCKOUT/TAGOUT AND ARC FLASH SAFETY PROCEDURES.



MATCHLINE -REFER TO 01-E-100 FOR CONTINUATION

ELECTRICAL SITE 2 OF 2 AREA PLAN

SCALE: 1"=30'-0"

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ELECTRICAL SITE 2 OF 2 AREA PLAN

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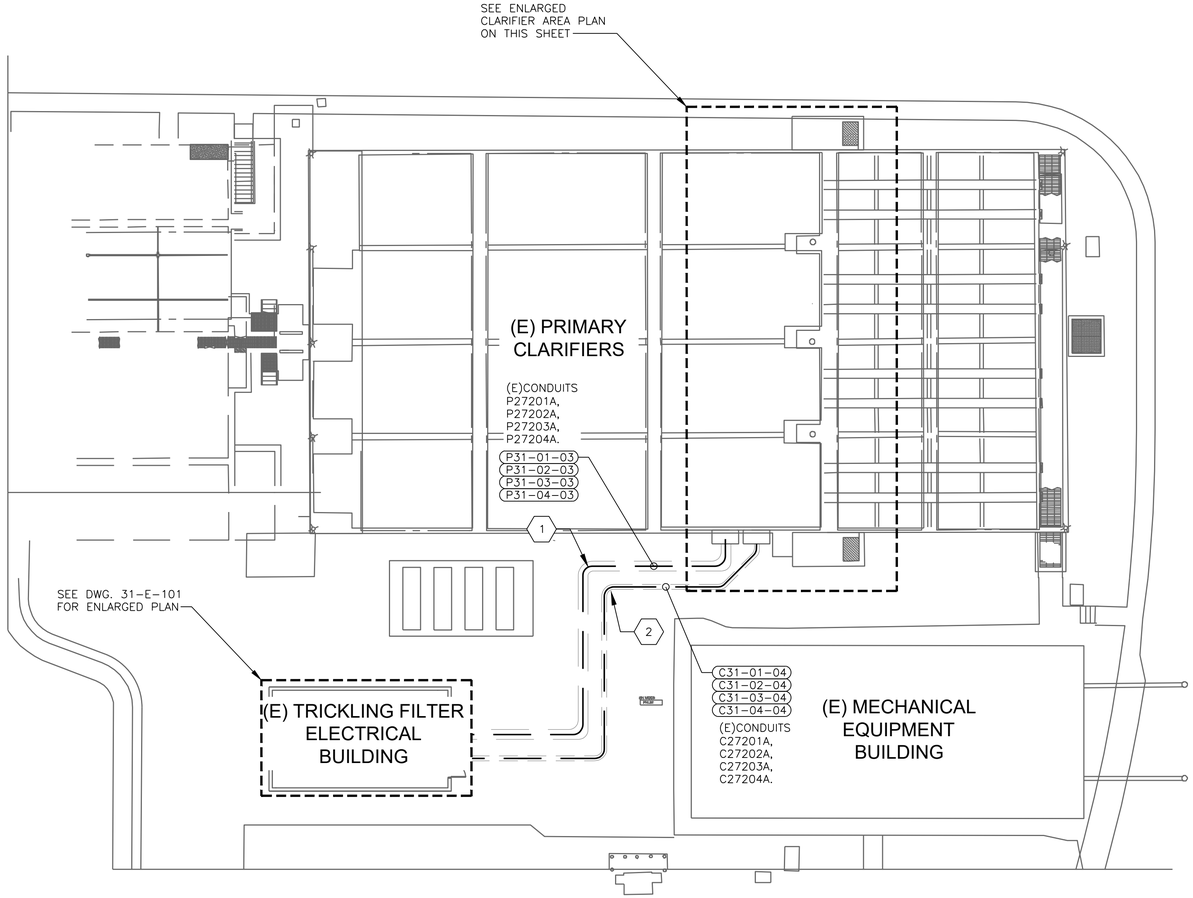
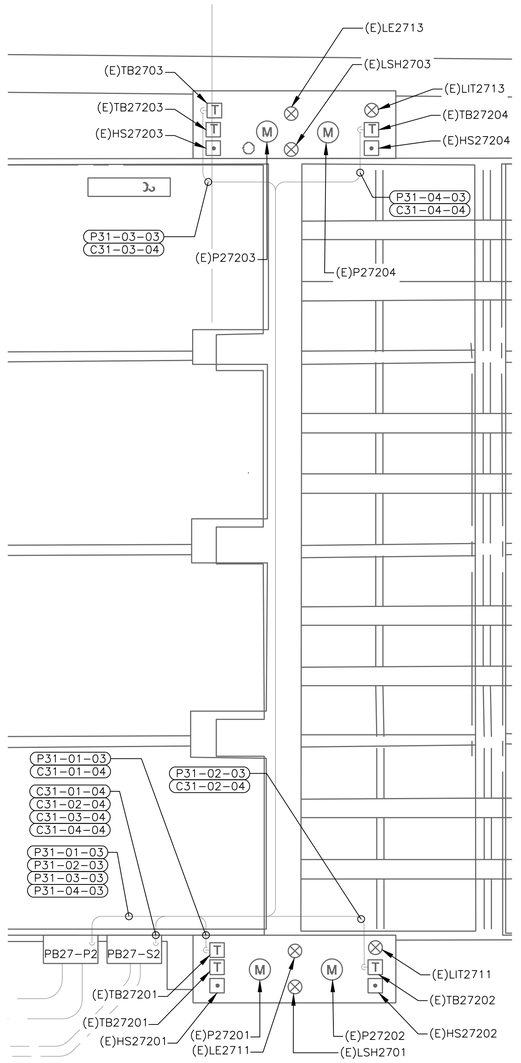


CLARIFIER AREA & TRICKLING FILTER ELECTRICAL BUILDING

SCALE: 1/16"=1'-0"



CLARIFIER AREA

SCALE: 1/8"=1'-0"

GENERAL NOTES

1. REFER TO DRAWING 00-E-003/004 FOR ELECTRICAL INSTALLATION DETAILS.
2. REFER TO DRAWING 00-E-006 FOR CONDUIT AND CABLE REQUIREMENTS.
3. FOLLOW ALL LOCKOUT/TAGOUT AND ARC FLASH SAFETY PROCEDURES.

KEY NOTES

1. ROUTE VFD POWER CABLES IN EXISTING CONDUITS VIA HH27-P2. RE-NAME EXISTING CONDUITS WITH NEW TAG NUMBER.
2. ROUTE VFD CONTROL CABLES IN EXISTING CONDUITS VIA HH27-S2. RE-NAME EXISTING CONDUITS WITH NEW TAG NUMBER.

REGISTERED PROFESSIONAL ENGINEER ZANE E. WILSTERMAN No. E22550 Exp. 12-31-24 ELECTRICAL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

THIS LINE IS 1 INCH AT FULL SCALE IF NOT SCALE ACCORDINGLY

SCALE : AS NOTED
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

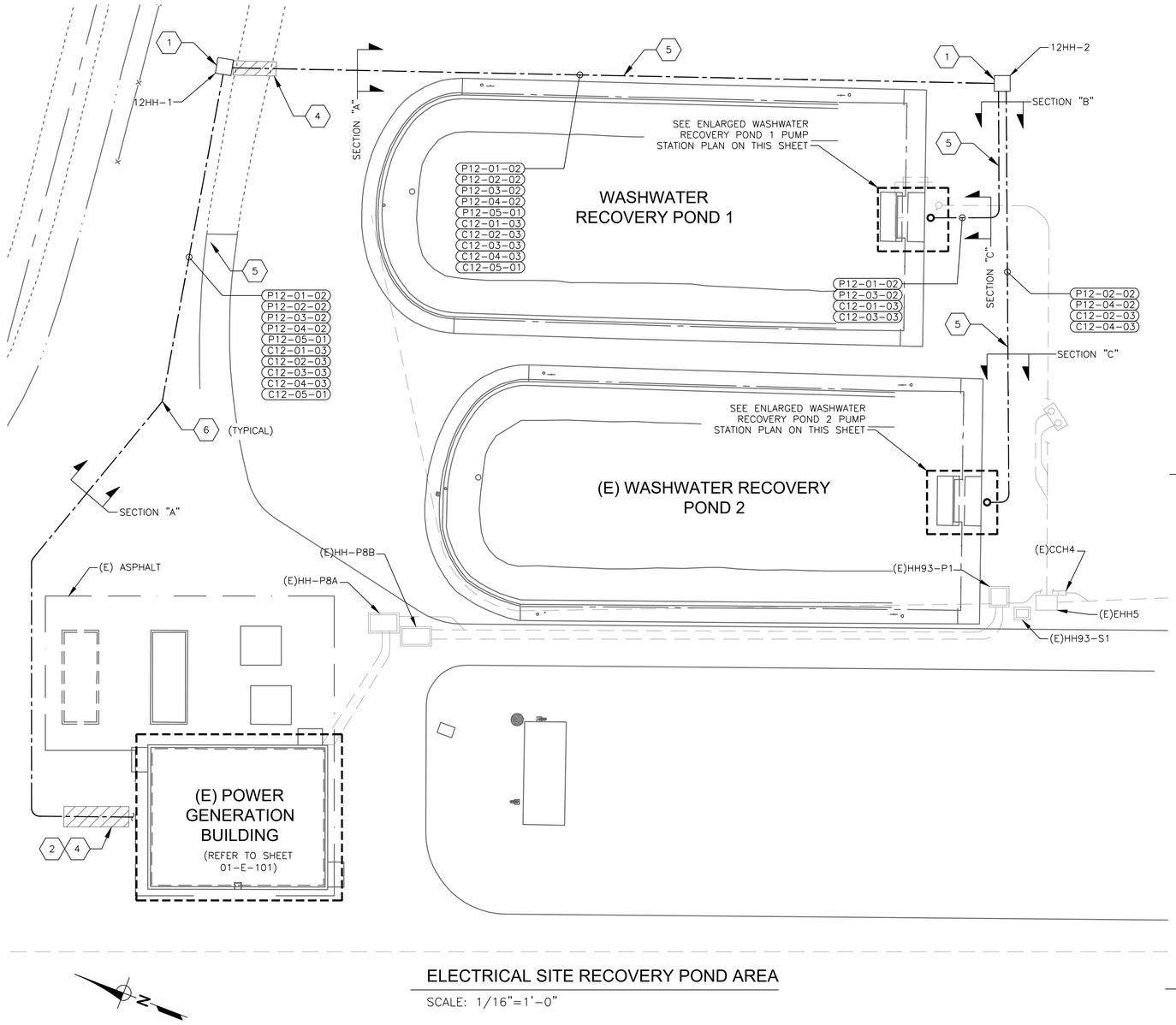
WEST YOST Water. Engineered.

Ukiah Utilities A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
ENLARGED PRIMARY CLARIFIER AREA

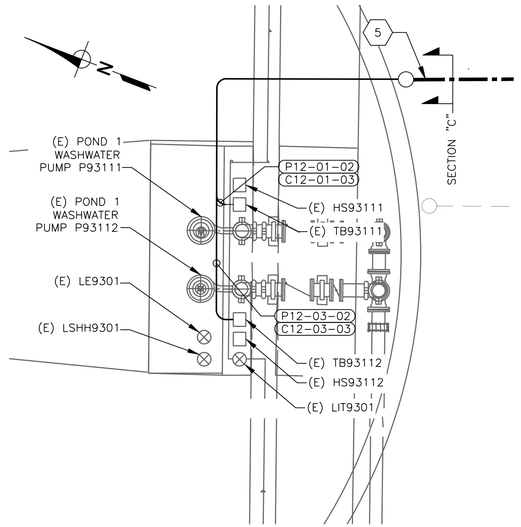
JOB NUMBER 592-50-22-14
DRAWING NUMBER 01-E-200
SHEET NUMBER 48 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-01-E-200.dwg 7-17-23 09:20:45 AM sbarber



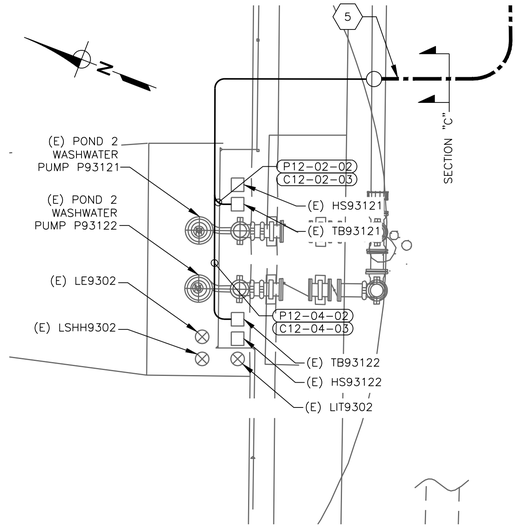
ELECTRICAL SITE RECOVERY POND AREA

SCALE: 1/16"=1'-0"



WASHWATER RECOVERY POND 1 PUMP STATION PLAN

SCALE: 1/4"=1'-0"



WASHWATER RECOVERY POND 2 PUMP STATION PLAN

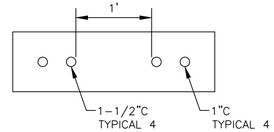
SCALE: 1/4"=1'-0"

GENERAL NOTES

1. REFER TO DRAWINGS 00-E-003/004 FOR ELECTRICAL INSTALLATION DETAILS.
2. REFER TO DRAWING 00-E-006 FOR CONDUIT AND CABLE REQUIREMENTS.
3. FOLLOW ALL LOCKOUT/TAGOUT AND ARC FLASH SAFETY PROCEDURES.

KEY NOTES

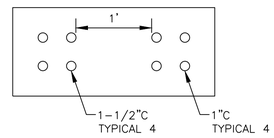
1. INSTALL ELECTRICAL HANDHOLE PER TYPICAL DETAIL "H1" ON SHEET 00-E-004.
2. SAWCUT EXISTING CONCRETE PAD TO ALLOW CONDUIT DUCTBANK TO BE INSTALLED.
3. SAWCUT EXISTING ASPHALT TO ALLOW CONDUIT DUCTBANK TO BE INSTALLED.
4. INSTALL REINFORCED, CONCRETE ENCASED, ELECTRICAL DUCTBANK PER TYPICAL DETAIL "DB2" ON SHEET 00-E-004.
5. INSTALL CONCRETE ENCASED, ELECTRICAL DUCTBANK PER TYPICAL DETAIL "DB1" ON SHEET 00-E-004.
6. DUCTBANK SHALL UTILIZE MANUFACTURER LONG RADIUS BENDS FOR ALL 90° AND 45° BENDS.



DUCT BANK CROSS SECTION "C"

SCALE: 1"=1'-0"

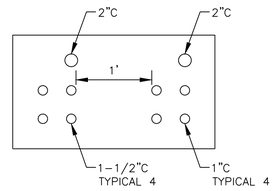
NOTE: INSTALL ELECTRICAL DUCTBANKS PER TYPICAL DETAILS DRAWING 00-E-004.



DUCT BANK CROSS SECTION "B"

SCALE: 1"=1'-0"

NOTE: INSTALL ELECTRICAL DUCTBANKS PER TYPICAL DETAILS DRAWING 00-E-004.



DUCT BANK CROSS SECTION "A"

SCALE: 1"=1'-0"

NOTE: INSTALL ELECTRICAL DUCTBANKS PER TYPICAL DETAILS DRAWING 00-E-004.

REGISTERED PROFESSIONAL ENGINEER ZANE E. WILSTERMAN No. E22550 Exp. 12-31-24 ELECTRICAL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

THIS LINE IS 1 INCH AT FULL SCALE IF NOT SCALE ACCORDINGLY

SCALE : AS NOTED
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST Water. Engineered.

Ukiah Utilities A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
ENLARGED WASHWATER RECOVERY POND AREA

JOB NUMBER 592-50-22-14
DRAWING NUMBER 01-E-201
SHEET NUMBER 49 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-01-E-201.dwg 7-17-23 09:21:21 AM sbarber

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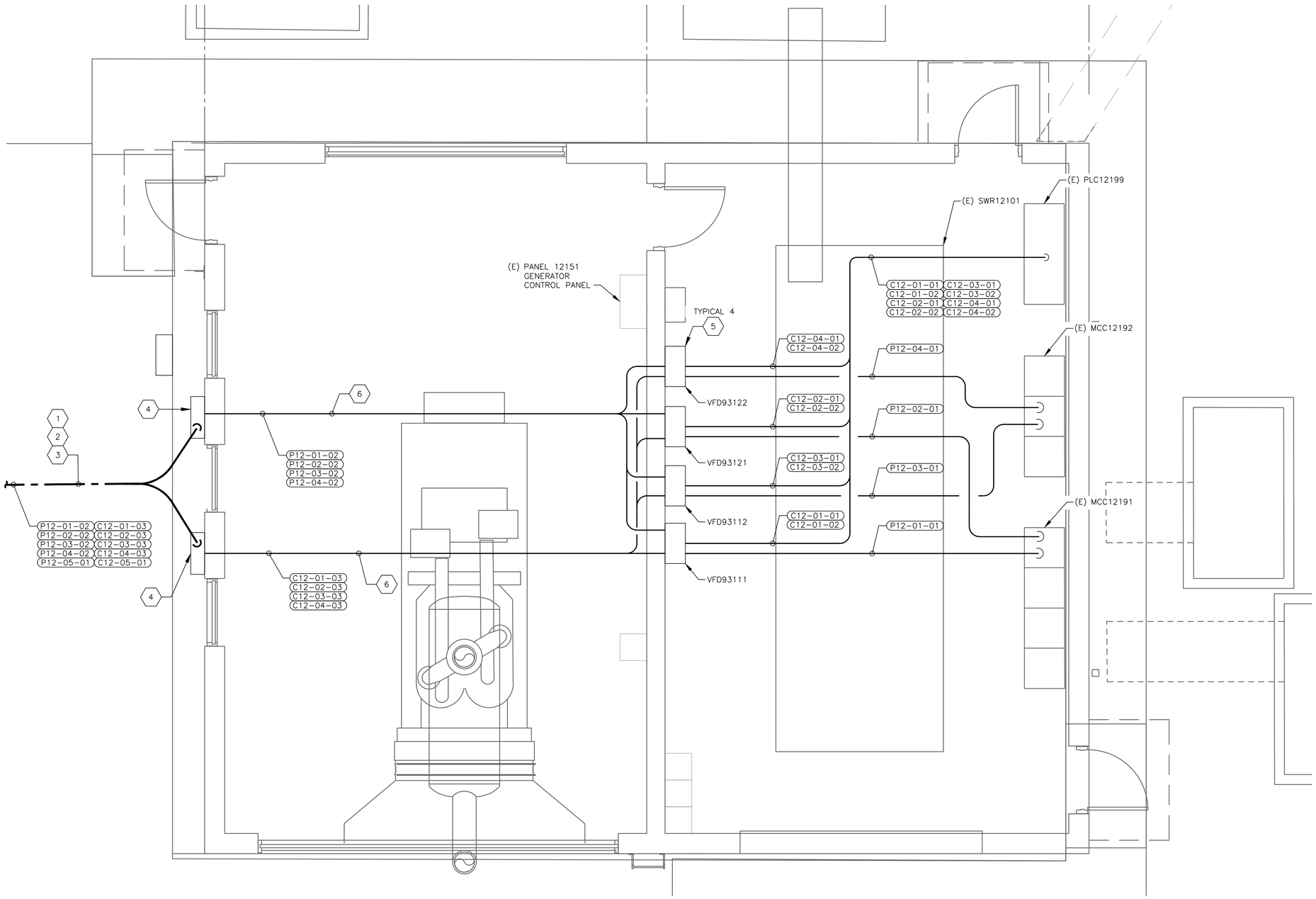
GENERAL NOTES

1. REFER TO DRAWINGS 00-E-003/004 FOR ELECTRICAL INSTALLATION DETAILS.
2. REFER TO DRAWING 00-E-006 FOR CONDUIT AND CABLE REQUIREMENTS.
3. FOLLOW ALL LOCKOUT/TAGOUT AND ARC FLASH SAFETY PROCEDURES.

KEY NOTES

1. SAWCUT EXISTING CONCRETE PAD TO ALLOW CONDUIT DUCTBANK TO BE INSTALLED.
2. DUCTBANK SHALL UTILIZE MANUFACTURER LONG RADIUS BENDS FOR ALL 90° AND 45° BENDS.
3. INSTALL REINFORCED CONCRETE ENCASED, ELECTRICAL DUCTBANK PER TYPICAL DETAIL "DB2" ON SHEET 00-E-004.
4. INSTALL 2-24"X"24"X6" TYPE 4X 316 SS JUNCTION BOXES (POWER/INSTRUMENT) AT +11' AFG. INSTALL ON EXTERIOR WALL WITH STAINLESS STEEL HARDWARE. COORDINATE ROUTING FROM THE EXTERIOR TO INTERIOR OF THE POWER GENERATION BUILDING. DO NOT PENETRATE TOP OF BOX.
5. MOUNT VFD ENCLOSURES TO WALL AT +36"AFF. COORDINATE CONDUIT ROUTING FROM THE VFDS TO MCCS.
6. ROUTE CONDUIT ALONG CEILING.



ENLARGED POWER GENERATION BUILDING PLAN

SCALE: 3/8"=1'-0"

REGISTERED PROFESSIONAL ENGINEER
ZANE E. WILSERMAN
No. E22550
Exp. 12-31-24
ELECTRICAL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

THIS LINE IS 1 INCH
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IF NOT SCALE ACCORDINGLY

SCALE : AS NOTED
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

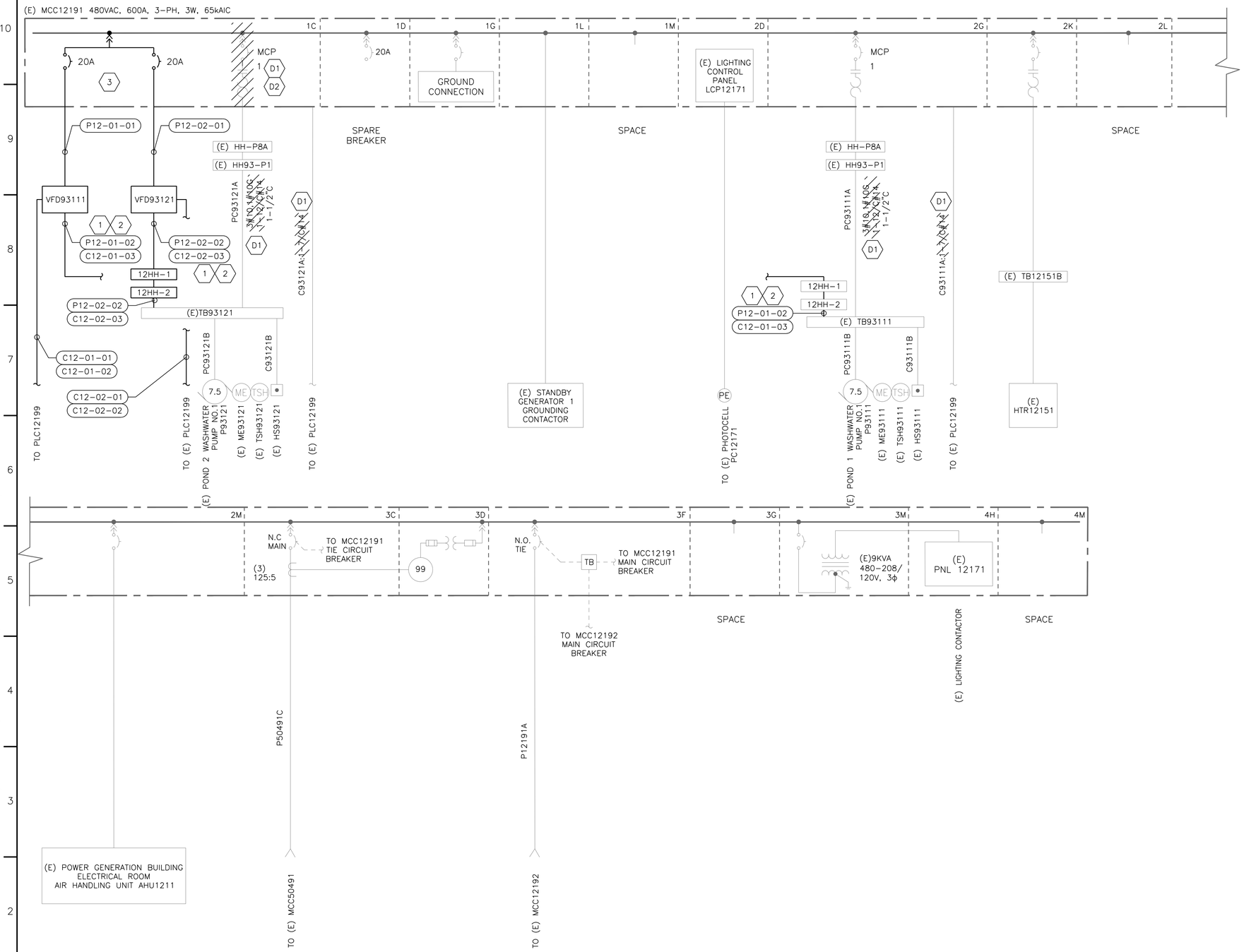
NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
POWER GENERATION BUILDING PLAN

JOB NUMBER 592-50-22-14
DRAWING NUMBER 12-E-101
SHEET NUMBER 50 OF 89
REVISION



GENERAL NOTES

1. REFER TO DRAWING 00-E-006 FOR CONDUIT AND CONDUCTOR REQUIREMENTS.
2. FOLLOW ALL LOCKOUT AND TAGOUT PROCEDURES AND ARC FLASH SAFETY PROCEDURES.

KEY NOTES - DEMO NOTES

- D1 DISCONNECT AND REMOVE CONDUCTORS BACK TO SOURCE.
- D2 DISCONNECT AND REMOVE FVNR STARTER BUCKET AND MCC DOOR. SALVAGE STARTER BUCKET AND DOOR TO OWNER.

KEY NOTES

- 1 ROUTE VFD POWER CABLE IN EXISTING CONDUIT.
- 2 ROUTE VFD CONTROL CABLE IN EXISTING CONDUIT.
- 3 INSTALL BUCKET, BREAKERS AND NEW DOOR IN EXISTING SQUARE D MODEL 6 MCC. BREAKER SHALL MATCH MFR AND SCCR.

REGISTERED PROFESSIONAL ENGINEER
ZANE E. WILSTERMAN
No. E22550
Exp. 12-31-24
ELECTRICAL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

THIS LINE IS 1 INCH
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IF NOT SCALE ACCORDINGLY

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DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

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Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MCC12191 ONE LINE DIAGRAM

JOB NUMBER 592-50-22-14
DRAWING NUMBER 12-E-102
SHEET NUMBER 51 OF 89
REVISION

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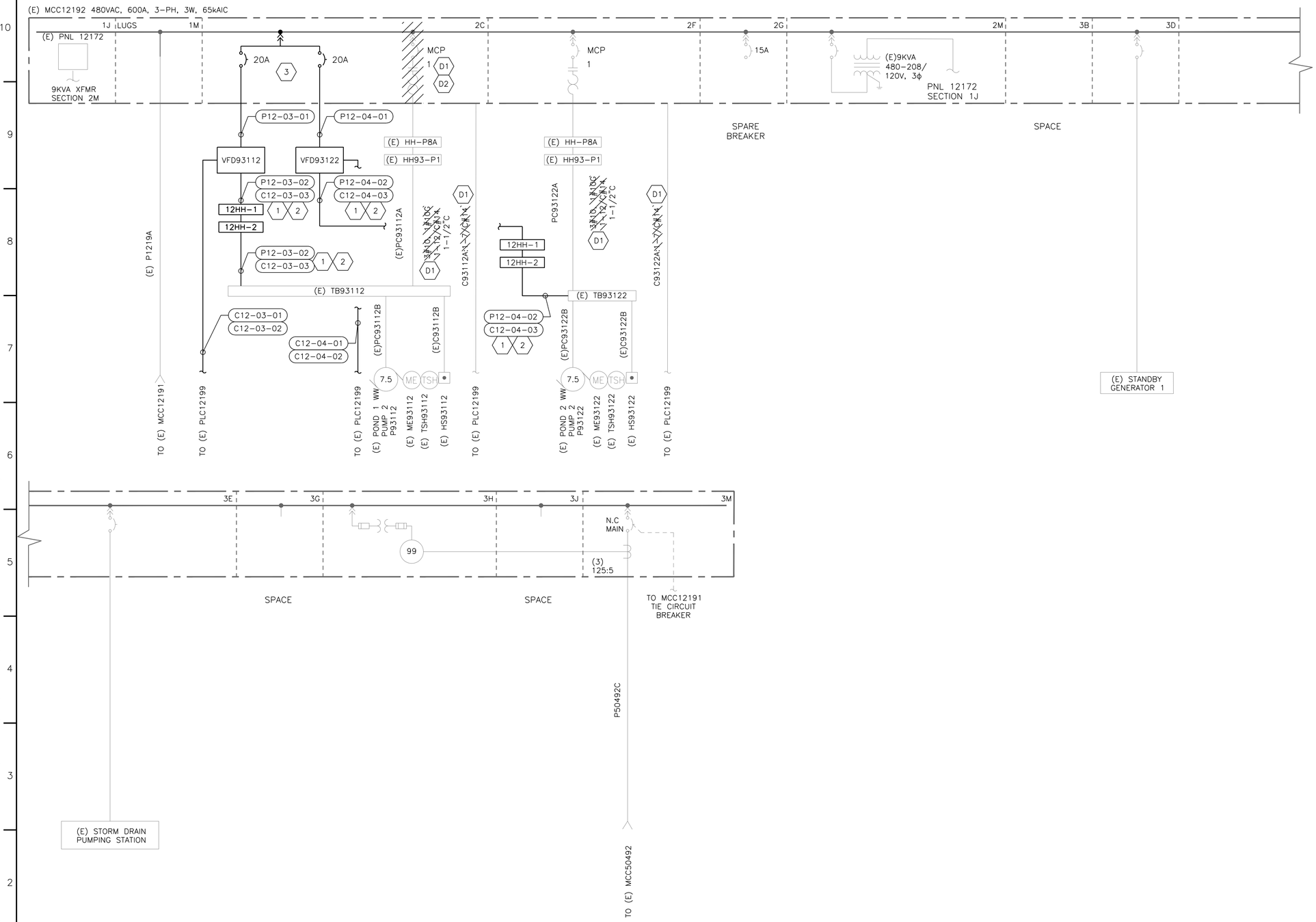


GENERAL NOTES

1. REFER TO DRAWING 00-E-006 FOR CONDUIT AND CONDUCTOR REQUIREMENTS.
2. FOLLOW ALL LOCKOUT AND TAGOUT PROCEDURES AND ARC FLASH SAFETY PROCEDURES.

KEY NOTES - DEMO NOTES

D1 DISCONNECT AND REMOVE CONDUCTORS BACK TO SOURCE.

D2 DISCONNECT AND REMOVE FVNR STARTER BUCKET AND MCC DOOR. SALVAGE STARTER BUCKET AND DOOR TO OWNER.

KEY NOTES

1 ROUTE VFD POWER CABLE IN EXISTING CONDUIT.

2 ROUTE VFD CONTROL CABLE IN EXISTING CONDUIT.

3 INSTALL BUCKET, BREAKERS AND NEW DOOR IN EXISTING SQUARE D MODEL 6 MCC. BREAKER SHALL MATCH MFR AND SCCR.

REGISTERED PROFESSIONAL ENGINEER ZANE E. WILSTERMAN No. E22550 Exp. 12-31-24 ELECTRICAL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

THIS LINE IS 1 INCH AT FULL SCALE IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

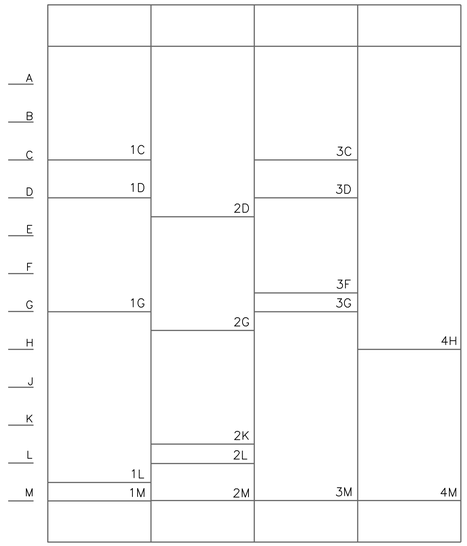
WEST YOST Water. Engineered.

Ukiah Utilities A Department of the City of Ukiah

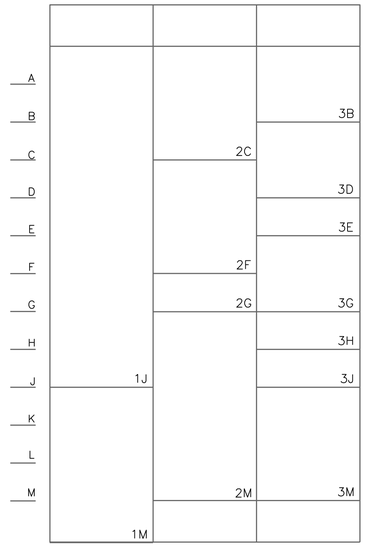
CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MCC12192 ONE LINE DIAGRAM

JOB NUMBER 592-50-22-14
DRAWING NUMBER 12-E-103
SHEET NUMBER 52 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-12-E-103.dwg 7-17-23 09:24:43 AM sbarber



(E) MCC 12191 - ELEVATION VIEW



(E) MCC 12192 - ELEVATION VIEW

GENERAL NOTES

1. FOLLOW ALL LOCKOUT AND TAGOUT PROCEDURES INCLUDING ARC FLASH SAFETY PROCEDURES AND PROPER PPE.

KEY NOTES

1. CONTRACTOR SHALL REMOVE EXISTING MOTOR STARTER, POWER WIRING AND CONTROL WIRING THAT SERVES WASHWATER PUMPS: P93111, P93121, P93112, P93122. RETURN ALL COMPONENTS TO CLIENT. CONTRACTOR SHALL ORDER NEW BUCKET EQUIPPED WITH DUAL 20A/3P BREAKERS AND DOOR TO MATCH EXISTING MCC MFR AND SCCR TO PROVIDE POWER TO NEW VFD'S: VFD93111, VFD93121, VFD93112, VFD93122.
2. CONTRACTOR SHALL REMOVE EXISTING POWER WIRING AND CONTROL WIRING THAT SERVES WASHWATER PUMP/S: P93111, P93121, P93112, P93122. RETURN ALL COMPONENTS TO CLIENT. CONTRACTOR LABEL EXISTING MOTOR STARTER AS SPARE, AND INSTALL THREADED CAP AND LABEL ABANDONED CONDUIT (PC9311A, PC93121A, PC93112A, PC93122A.)
3. INSTALL BLACK 1" X 2" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
   LINE 1: "WASHWATER POND 1"
   LINE 2: "PUMP #1 VFD93111"
4. INSTALL BLACK 1" X 2" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
   LINE 1: "WASHWATER POND 2"
   LINE 2: "PUMP #1 VFD93121"
5. INSTALL BLACK 1" X 2" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
   LINE 1: "WASHWATER POND 1"
   LINE 2: "PUMP #2 VFD93112"
6. INSTALL BLACK 1" X 2" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
   LINE 1: "WASHWATER POND 2"
   LINE 2: "PUMP #2 VFD93122"
7. INSTALL BLACK 1" X 2" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
   LINE 1: "SPARE"
   LINE 2: "SIZE 1"

MCC SECTION TABLE

TAG#	INSCRIPTION	NOTES
1C	~~POND 2 WASHWATER PUMP 1 P93121~~ POND 1 WW PUMP # 1 VFD93111 POND 2 WW PUMP # 1 VFD93121	1, 3, 4
1D	20A SPARE BREAKER	
1G	GROUND CONNECTION	
1L	STANDBY GENERATOR 1 GROUNDING CONTACTOR	
1M	SPACE	
2D	LCP12171 LIGHTING CONTROL PANEL	
2G	SPARE SIZE 1 STARTER ~~POND 1 WASHWATER PUMP 1 P93111~~	2, 7
2K	HTR12151	
2L	SPACE	
2M	POWER GEN BLDG ELECT ROOM AHU AHU12111	

MCC SECTION TABLE

TAG#	INSCRIPTION	NOTES
3C	MAIN BREAKER	
3D	POWER METER	
3F	125A TIE BREAKER	
3G	SPACE	
3M	9KVA DIST. XFMR	
4H	PNL12171	
4M	SPACE	

MCC SECTION TABLE

TAG#	INSCRIPTION	NOTES
1J	PNL 12172	
1M	600A MAIN LUGS (BOTTOM)	
2C	~~POND 1 WASHWATER PUMP 2 P3112~~ POND 1 WW PUMP #2 VFD93112 POND 2 WW PUMP #2 VFD93122	1, 5, 6
2F	SPARE SIZE 1 STARTER ~~POND 2 WASHWATER PUMP 2 P3122~~	2, 7
2G	15A SPARE BREAKER	
2M	9KVA DIST. XFMR	
3B	SPACE	
3D	STANDBY GENERATOR 1	
3E	STORM DRAIN PUMP STATION	
3G	SPACE	
3H	POWER METER	
3J	SPACE	
3M	MAIN BREAKER	

REGISTERED PROFESSIONAL ENGINEER
ZANE E. WILSTERMAN
No. E22550
Exp. 12-31-24
ELECTRICAL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

THIS LINE IS 1 INCH
AT FULL SCALE
IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MCC12191 & MCC12192 ELEVATIONS

JOB NUMBER 592-50-22-14
DRAWING NUMBER 12-E-104
SHEET NUMBER 53 OF 89
REVISION

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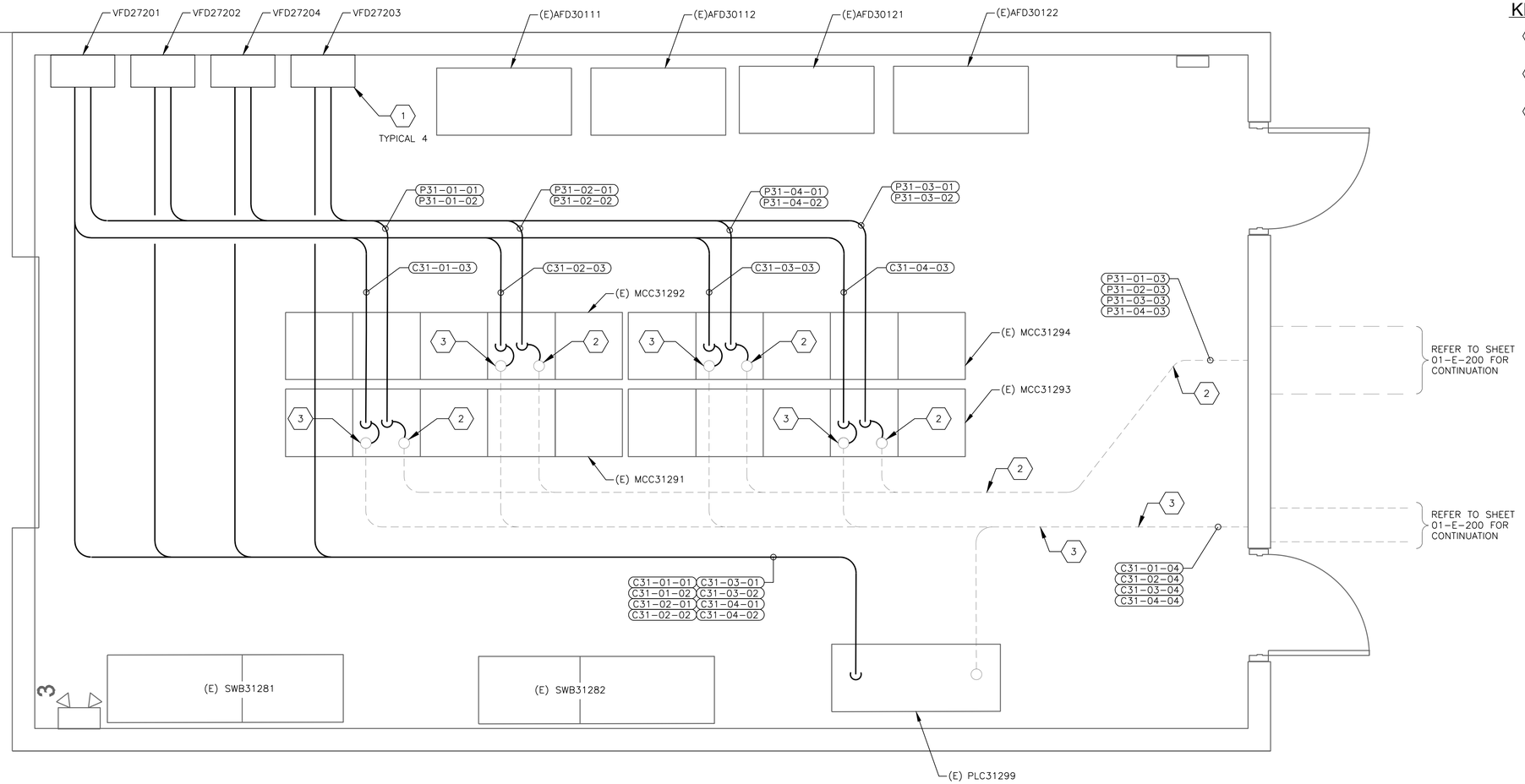
GENERAL NOTES

1. REFER TO DRAWINGS 00-E-003/004 FOR ELECTRICAL INSTALLATION DETAILS.
2. REFER TO DRAWING 00-E-006 FOR CONDUIT AND CABLE REQUIREMENTS.
3. FOLLOW ALL LOCKOUT/TAGOUT AND ARC FLASH SAFETY PROCEDURES.

KEY NOTES

1. MOUNT VFD ENCLOSURES TO WALL AT +36"AFF. COORDINATE CONDUIT ROUTING FROM THE VFDS TO MCCS
2. ROUTE VFD POWER CABLES IN EXISTING CONDUITS VIA HH27-P2. RE-NAME EXISTING CONDUITS WITH NEW TAG NUMBER.
3. ROUTE VFD CONTROL CABLES IN EXISTING CONDUITS VIA HH27-S2. RE-NAME EXISTING CONDUITS WITH NEW TAG NUMBER.



ENLARGED TRICKLING FILTER BUILDING

SCALE: 1/2"=1'-0"

REGISTERED PROFESSIONAL ENGINEER
ZANE E. WILSTERMAN
No. E22550
Exp. 12-31-24
ELECTRICAL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

THIS LINE IS 1 INCH
AT FULL SCALE
IF NOT SCALE ACCORDINGLY

SCALE : AS NOTED
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

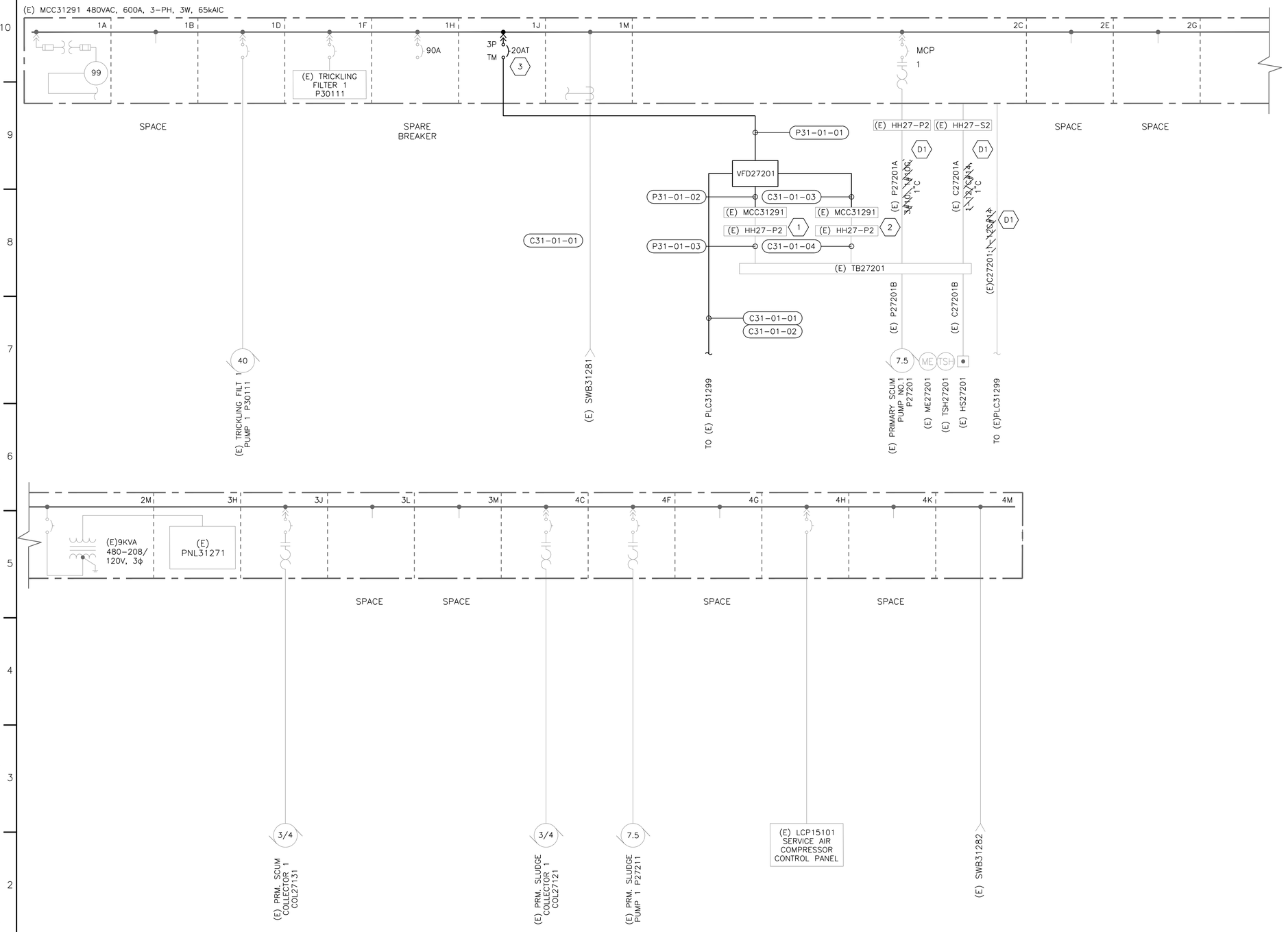
WEST YOST
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
ENLARGED TRICKLING FILTER BUILDING PLAN

JOB NUMBER 592-50-22-14
DRAWING NUMBER 31-E-101
SHEET NUMBER 54 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-31-E-101.dwg 7-17-23 09:25:47 AM sbarber



GENERAL NOTES

1. REFER TO DRAWING 00-E-006 FOR CONDUIT AND CONDUCTOR REQUIREMENTS.
2. FOLLOW ALL LOCKOUT AND TAGOUT PROCEDURES AND ARC FLASH SAFETY PROCEDURES.

KEY NOTES - DEMO NOTES

(D1) DISCONNECT AND REMOVE CONDUCTORS BACK TO SOURCE.

KEY NOTES

(1) ROUTE VFD POWER CABLES IN EXISTING CONDUITS VIA HH27-P2. RE-NAME EXISTING CONDUITS WITH NEW TAG NUMBER.

(2) ROUTE VFD CONTROL CABLE IN EXISTING CONDUITS VIA HH27-S2. RE-NAME EXISTING CONDUITS WITH NEW TAG NUMBER.

(3) INSTALL BUCKET, BREAKER AND NEW DOOR IN EXISTING SQUARE D MODEL 6 MCC. BREAKER SHALL MATCH MFR AND SCCR.

REGISTERED PROFESSIONAL ENGINEER ZANE E. WILSTERMAN No. E22550 Exp. 12-31-24 ELECTRICAL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

THIS LINE IS 1 INCH AT FULL SCALE IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

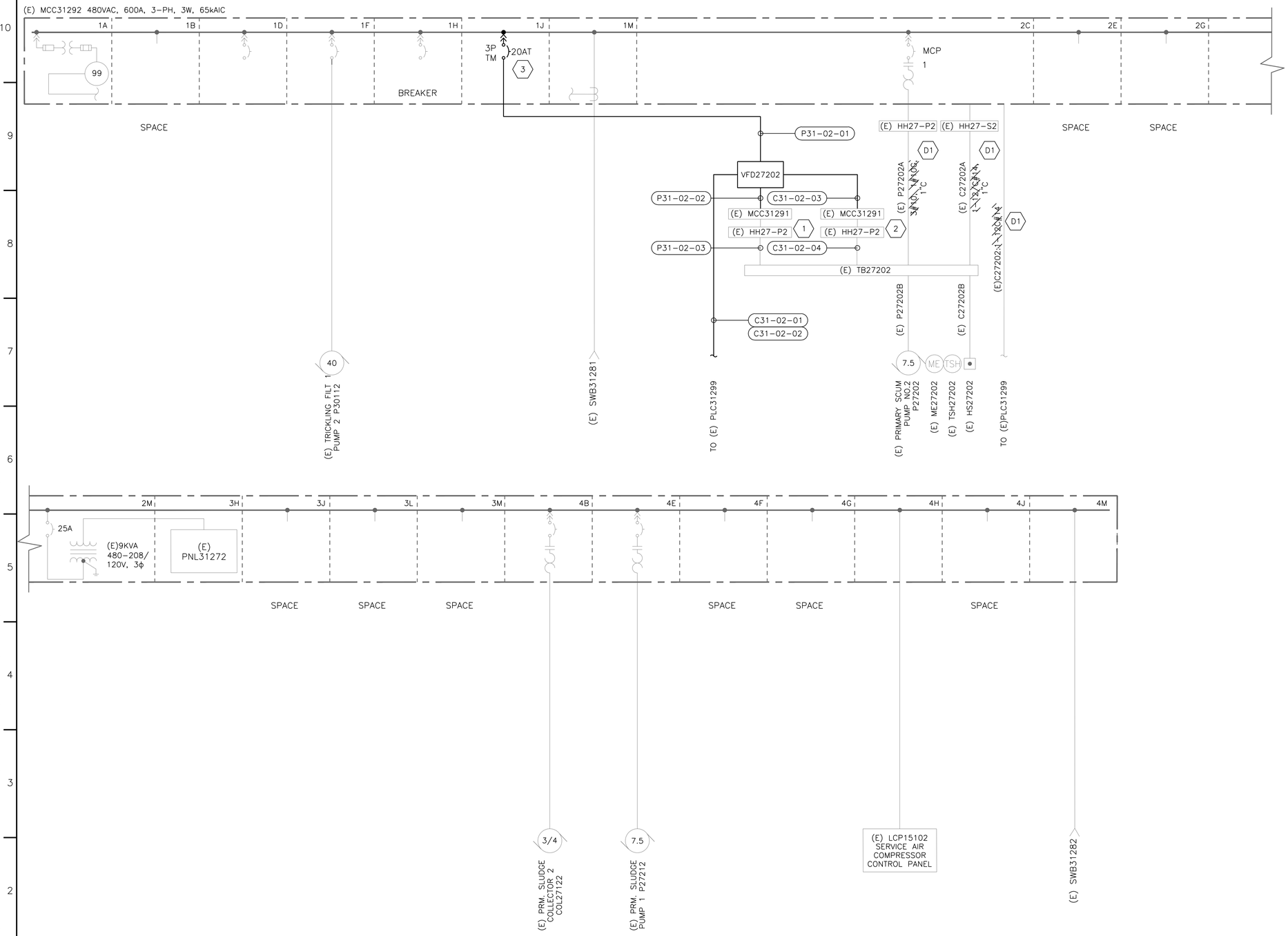
WEST YOST
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MCC31291 ONE LINE DIAGRAM

JOB NUMBER 592-50-22-14
DRAWING NUMBER 31-E-102
SHEET NUMBER 55 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-31-E-102.dwg 7-17-23 09:26:18 AM sbarber



GENERAL NOTES

1. REFER TO DRAWING 00-E-006 FOR CONDUIT AND CONDUCTOR REQUIREMENTS.
2. FOLLOW ALL LOCKOUT AND TAGOUT PROCEDURES AND ARC FLASH SAFETY PROCEDURES.

KEY NOTES - DEMO NOTES

(D1) DISCONNECT AND REMOVE CONDUCTORS BACK TO SOURCE.

KEY NOTES

(1) ROUTE VFD POWER CABLES IN EXISTING CONDUITS VIA HH27-P2. RE-NAME EXISTING CONDUITS WITH NEW TAG NUMBER.

(2) ROUTE VFD CONTROL CABLES IN EXISTING CONDUITS VIA HH27-S2. RE-NAME EXISTING CONDUITS WITH NEW TAG NUMBER.

(3) INSTALL BUCKET, BREAKER AND NEW DOOR IN EXISTING SQUARE D MODEL 6 MCC. BREAKER SHALL MATCH MFR AND SCCR.

REGISTERED PROFESSIONAL ENGINEER
ZANE E. WILSTERMAN
No. E22550
Exp. 12-31-24
ELECTRICAL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

THIS LINE IS 1 INCH
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SCALE : NONE
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

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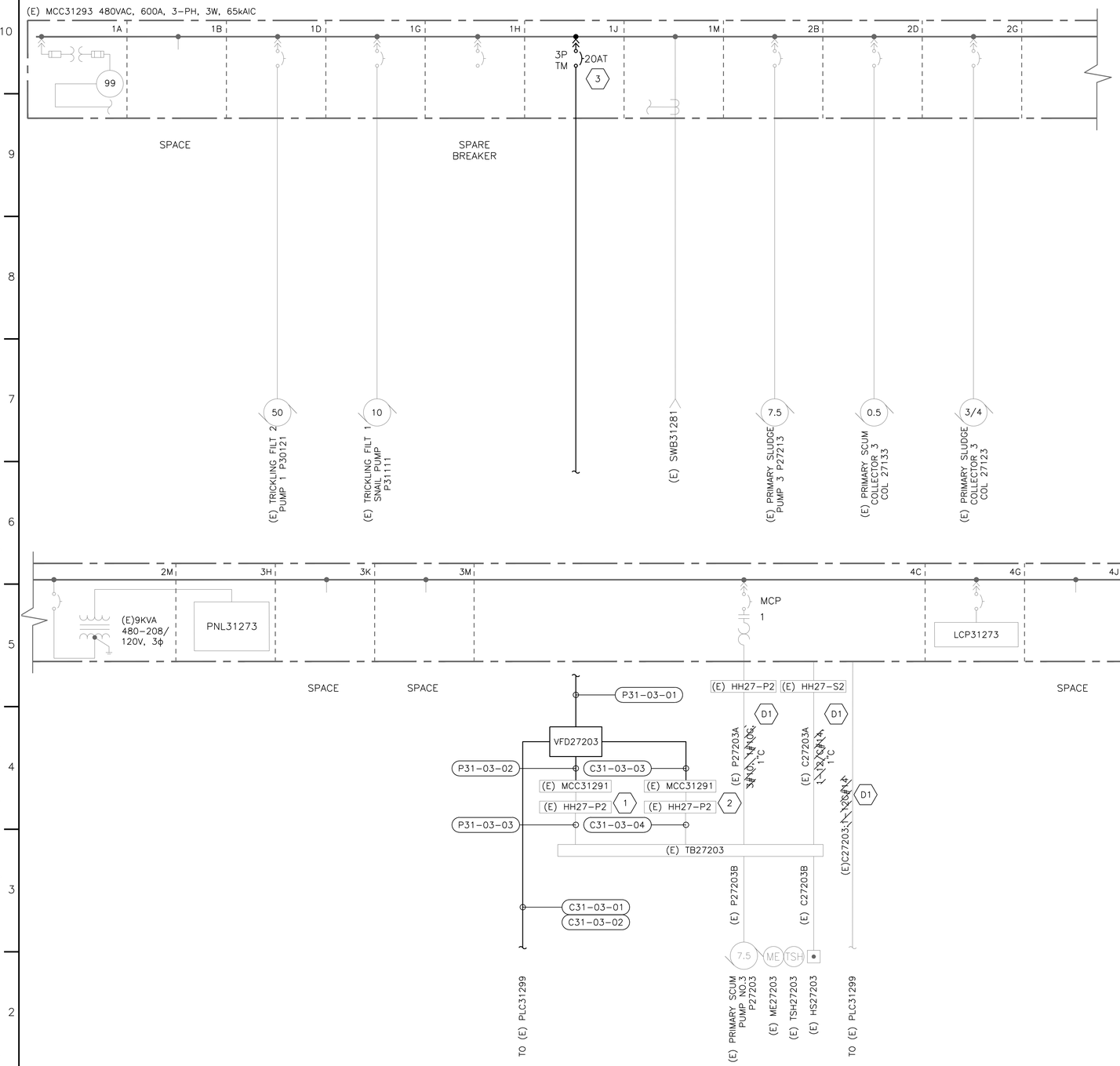
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MCC31292 ONE LINE DIAGRAM

JOB NUMBER 592-50-22-14
DRAWING NUMBER 31-E-103
SHEET NUMBER 56 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-31-E-103.dwg 7-17-23 09:27:04 AM sbarber



GENERAL NOTES

1. REFER TO DRAWING 00-E-006 FOR CONDUIT AND CONDUCTOR REQUIREMENTS.
2. FOLLOW ALL LOCKOUT AND TAGOUT PROCEDURES AND ARC FLASH SAFETY PROCEDURES.

KEY NOTES - DEMO NOTES

(D1) DISCONNECT AND REMOVE CONDUCTORS BACK TO SOURCE.

KEY NOTES

(1) ROUTE VFD POWER CABLES IN EXISTING CONDUITS VIA HH27-P2. RE-NAME EXISTING CONDUITS WITH NEW TAG NUMBER.

(2) ROUTE VFD CONTROL CABLES IN EXISTING CONDUITS VIA HH27-S2. RE-NAME EXISTING CONDUITS WITH NEW TAG NUMBER.

(3) INSTALL BUCKET, BREAKER AND NEW DOOR IN EXISTING SQUARE D MODEL 6 MCC. BREAKER SHALL MATCH MFR AND SCCR.

REGISTERED PROFESSIONAL ENGINEER ZANE E. WILSTERMAN No. E22550 Exp. 12-31-24 ELECTRICAL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

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1		CONFORMED TO ADDENDA	TRB	7/17/23

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Ukiah Utilities A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MCC31293 ONE LINE DIAGRAM

JOB NUMBER 592-50-22-14
DRAWING NUMBER 31-E-104
SHEET NUMBER 57 OF 89
REVISION

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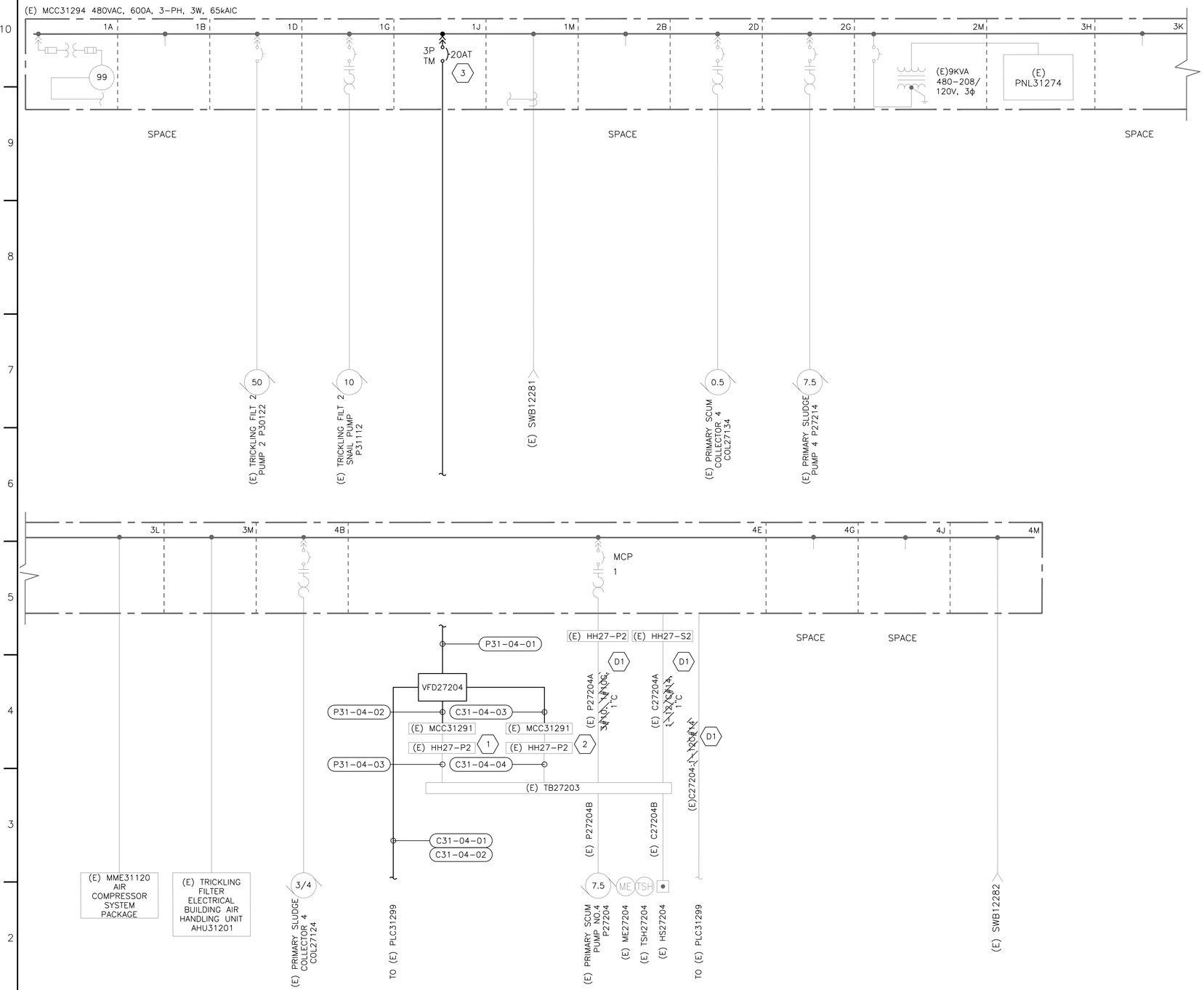

GENERAL NOTES

1. REFER TO DRAWING 00-E-006 FOR CONDUIT AND CONDUCTOR REQUIREMENTS.
2. FOLLOW ALL LOCKOUT AND TAGOUT PROCEDURES AND ARC FLASH SAFETY PROCEDURES.

KEY NOTES - DEMO NOTES

(D1) DISCONNECT AND REMOVE CONDUCTORS BACK TO SOURCE.

KEY NOTES

(1) ROUTE VFD POWER CABLES IN EXISTING CONDUITS VIA HH27-P2. RE-NAME EXISTING CONDUITS WITH NEW TAG NUMBER.

(2) ROUTE VFD CONTROL CABLES IN EXISTING CONDUITS VIA HH27-S2. RE-NAME EXISTING CONDUITS WITH NEW TAG NUMBER.

(3) INSTALL BUCKET, BREAKER AND NEW DOOR IN EXISTING SQUARE D MODEL 6 MCC. BREAKER SHALL MATCH MFR AND SCCR.

REGISTERED PROFESSIONAL ENGINEER
ZANE E. WILSTERMAN
No. E22550
Exp. 12-31-24
ELECTRICAL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

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NO.	ZONE	REVISIONS	BY	DATE
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A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MCC31294 ONE LINE DIAGRAM

JOB NUMBER 592-50-22-14
DRAWING NUMBER 31-E-105
SHEET NUMBER 58 OF 89
REVISION

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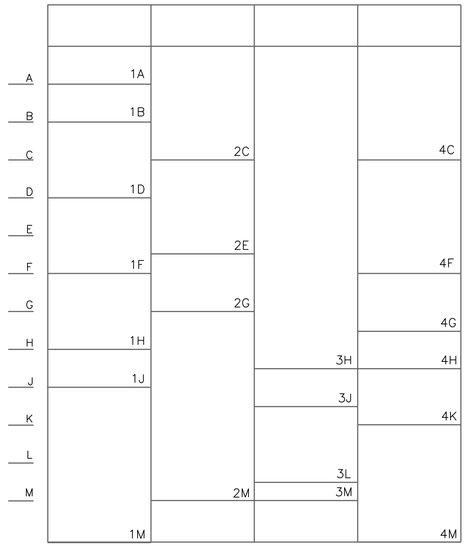
GENERAL NOTES

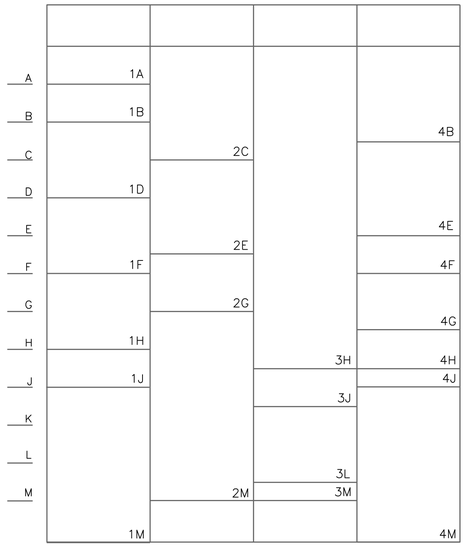
1. FOLLOW ALL LOCKOUT AND TAGOUT PROCEDURES INCLUDING ARC FLASH SAFETY PROCEDURES AND PROPER PPE.

KEY NOTES

1. CONTRACTOR SHALL REMOVE EXISTING POWER WIRING AND CONTROL WIRING THAT SERVES PRIMARY SCUM PUMPS: P27201, P27202. CONTRACTOR SHALL LABEL EXISTING MOTOR STARTER AS SPARE.
2. INSTALL BLACK 1" X 2" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
   LINE 1: "PRIMARY SCUM PUMP"
   LINE 2: "NO.1 VFD (VFD27201)"
3. INSTALL BLACK 1" X 2" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
   LINE 1: "PRIMARY SCUM PUMP"
   LINE 2: "NO.2 VFD (VFD27202)"
4. INSTALL BUCKET, BREAKER AND NEW DOOR IN EXISTING SQUARE D MODEL 6 MCC. BREAKER SHALL MATCH MFR AND SCCR.
5. REMOVE EXISTING NAMEPLATE.
   INSTALL BLACK 1" X 2" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
   LINE 1: "SPARE NEMA"
   LINE 2: "SIZE 1 STARTER"



(E) MCC 31291 - ELEVATION VIEW



(E) MCC 31292 - ELEVATION VIEW

MCC SECTION TABLE

TAG#	INSCRIPTION	NOTES
1A	POWER METER	
1B	SPACE	
1D	TRICKLING FILTER 1 PUMP 1 P30111	
1F	TRICKLING FILTER 1 P30111	
1H	SPARE BREAKER	
1J	PRIMARY SCUM PUMP 1 P27201 ~~SPACE~~	2, 4
1M	SWB31281	
2C	SPARE NEMA SIZE 1 STARTER ~~PRIMARY SCUM PUMP 2 P27202 STARTER~~	1, 5
2E	SPACE	
2G	SPACE	

MCC SECTION TABLE

TAG#	INSCRIPTION	NOTES
2M	TRANSFORMER	
3H	PNL31271	
3J	PRM. SCUM COLLECTOR 1 COL27131	
3L	SPACE	
3M	SPACE	
4C	PRM. SLUDGE COLLECTOR 1 COL27121	
4F	PRIMARY SLUDGE PUMP 1 P27211	
4G	SPACE	
4H	LCP15101 BREAKER	
4K	SPACE	
4M	SWB31282	

MCC SECTION TABLE

TAG#	INSCRIPTION	NOTES
1A	POWER METER	
1B	SPACE	
1D	FUTURE TF 3 PUMP 2	
1F	TRICKLING FILTER 1 PUMP 2 P30112	
1H	BREAKER	
1J	PRIMARY SCUM PUMP 2 P27202 ~~SPACE~~	3, 4
1M	SWB31281	
2C	SPARE NEMA SIZE 1 STARTER ~~PRIMARY SCUM PUMP 2 P27202 STARTER~~	1, 5
2E	SPACE	
2G	SPACE	
2M	TRANSFORMER	
3H	PNL 31272	

MCC SECTION TABLE

TAG#	INSCRIPTION	NOTES
3J	SPACE	
3L	SPACE	
3M	SPACE	
4B	PRIMARY SLUDGE COLLECTOR 2 COL27122	
4E	PRIMARY SLUDGE PUMP 2 P27212	
4F	SPACE	
4G	SPACE	
4H	LCP15102 SERVICE AIR COMPRESSOR CONTROL PANEL	
4J	SPACE	
4M	SWB31282	

REGISTERED PROFESSIONAL ENGINEER
ZANE E. WILSTERMAN
No. E22550
Exp. 12-31-24
ELECTRICAL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

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DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
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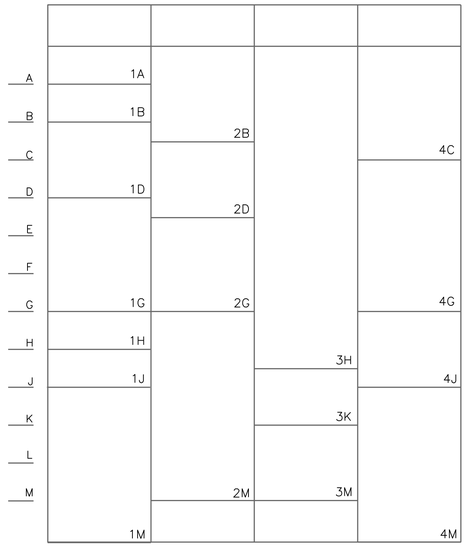
Ukiah Utilities
A Department of the City of Ukiah

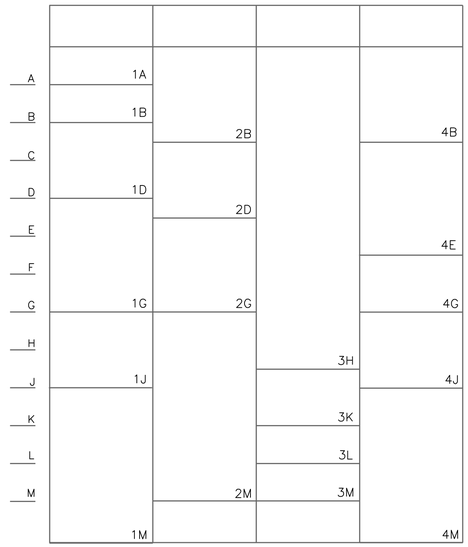
CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MCC31291 & MCC31292 ELEVATIONS

JOB NUMBER 592-50-22-14
DRAWING NUMBER 31-E-106
SHEET NUMBER 59 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-31-E-106.dwg 7-17-23 09:29:24 AM sbarber



(E) MCC 31293 - ELEVATION VIEW



(E) MCC 31294 - ELEVATION VIEW

GENERAL NOTES

1. FOLLOW ALL LOCKOUT AND TAGOUT PROCEDURES INCLUDING ARC FLASH SAFETY PROCEDURES AND PROPER PPE.

KEY NOTES

1. CONTRACTOR SHALL REMOVE EXISTING POWER WIRING AND CONTROL WIRING THAT SERVES PRIMARY SCUM PUMPS: P27203, P27204. RETURN ALL COMPONENTS TO CLIENT. CONTRACTOR SHALL LABEL EXISTING MOTOR STARTER AS SPARE.
2. INSTALL BLACK 1" X 2" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
   LINE 1: "PRIMARY SCUM PUMP"
   LINE 2: "NO.3 VFD (VFD27203)"
3. INSTALL BLACK 1" X 2" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
   LINE 1: "PRIMARY SCUM PUMP"
   LINE 2: "NO.4 VFD (VFD27204)"
4. INSTALL BUCKET, BREAKER AND NEW DOOR IN EXISTING SQUARE D MODEL MCC. BREAKER SHALL MATCH MFR AND SCCR.
5. REMOVE EXISTING NAMEPLATE. INSTALL BLACK 1" X 2" NAMEPLATE WITH 1/4" TEXT (ARIAL, CENTERED)
   LINE 1: "SPARE NEMA"
   LINE 2: "SIZE 1 STARTER"

MCC SECTION TABLE

TAG#	INSCRIPTION	NOTES
1A	POWER METER	
1B	SPACE	
1D	TRICKLING FILTER 2 PUMP 1 P30121	
1G	TRICKLING FILTER 1 SNAIL PUMP P31111	
1H	SPARE BREAKER	
1J	PRIMARY SCUM PUMP 3 P27203 ~~SPACE~~	2, 4
1M	SWB31281	
2B	PRIMARY SLUDGE PUMP 3 P27213	
2D	PRIMARY SCUM COLLECTOR 3 COL 27133	
2G	PRIMARY SLUDGE COLLECTOR 3 COL 27123	
2M	9KVA XFMR	

MCC SECTION TABLE

TAG#	INSCRIPTION	NOTES
3H	PNL31273	
3K	SPACE	
3M	SPACE	
4C	SPARE NEMA SIZE 1 STARTER ~~PRIMARY SCUM PUMP 3 P27203 STARTER~~	1, 5
4G	LCP31273	
4J	SPACE	
4M	SWB31282	

MCC SECTION TABLE

TAG#	INSCRIPTION	NOTES
1A	POWER METER	
1B	SPACE	
1D	TRICKLING FILTER 2 PUMP 2 P30122	
1G	TRICKLING FILTER 2 SNAIL PUMP P31112	
1J	PRIMARY SCUM PUMP 4 P27204 ~~SPACE~~	3, 4
1M	SWB12281	
2B	SPACE	
2D	PRIMARY SCUM COLLECTOR 4 COL27134	
2G	PRIMARY SLUDGE PUMP 4 P27214	
2M	XFMR	
3H	PNL31274	
3K	SPACE	
3L	MME31120 AIR COMPRESSOR SYSTEM PACKAGE	

MCC SECTION TABLE

TAG#	INSCRIPTION	NOTES
3M	TRICKLING FILTER ELECTRICAL BUILDING AIR HANDLING UNIT AHU31201	
4B	PRIMARY SLUDGE COLLECTOR 4 COL27124	
4E	SPARE NEMA SIZE 1 STARTER ~~PRIMARY SCUM PUMP 2 P27202 STARTER~~	1, 5
4G	SPACE	
4J	SPACE	
4M	SWB12282	

REGISTERED PROFESSIONAL ENGINEER ZANE E. WILSTERMAN No. E22550 Exp. 12-31-24 ELECTRICAL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

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DESIGNED BY : ZEW
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NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

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Ukiah Utilities — A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MCC31293 & MCC31294 ELEVATIONS

JOB NUMBER 592-50-22-14
DRAWING NUMBER 31-E-107
SHEET NUMBER 60 OF 89
REVISION

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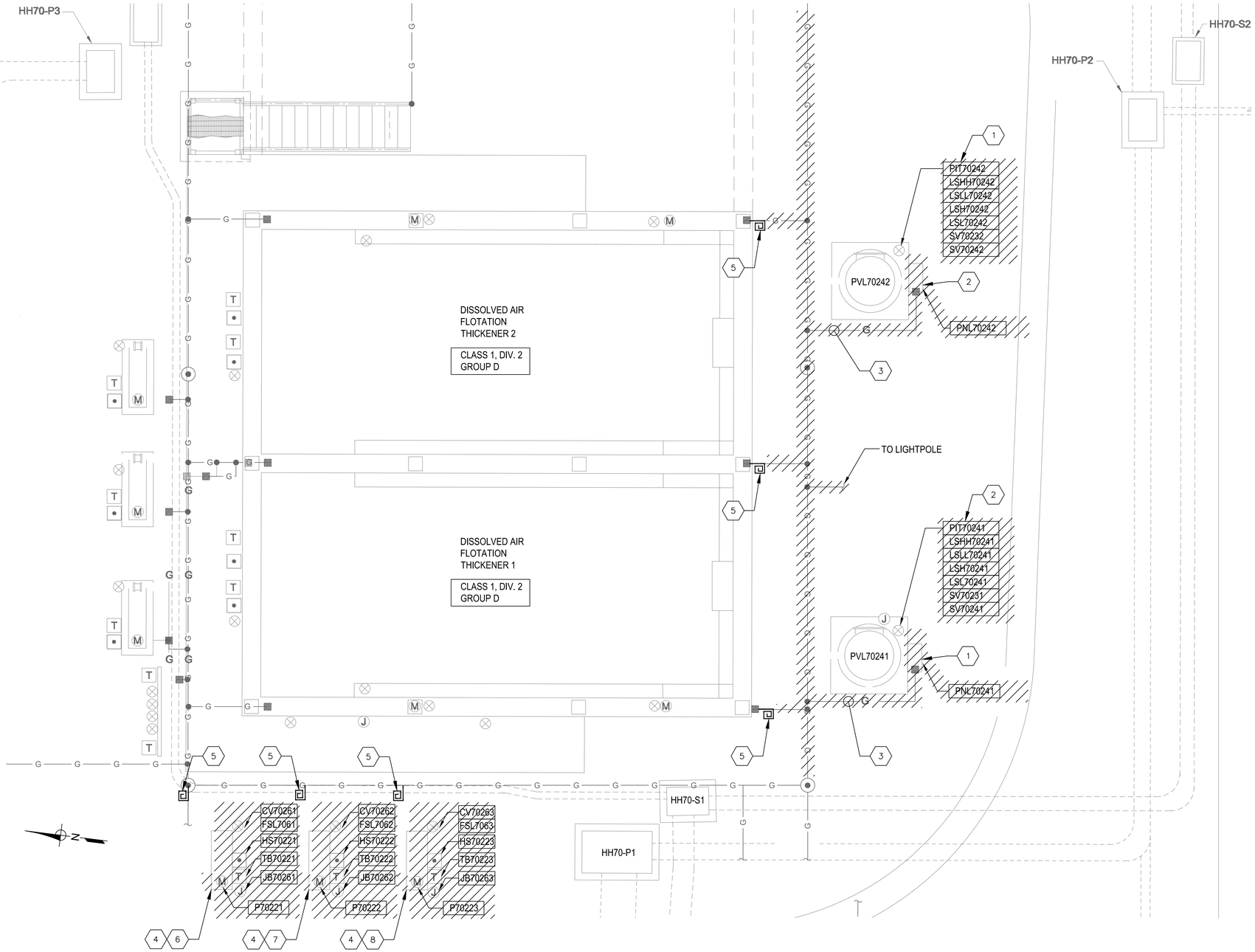


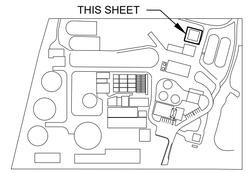
GENERAL NOTES

1. REFER TO DEMOLITION SHEETS 70-D-001 THROUGH 70-D-015 FOR ADDITIONAL REQUIREMENTS.
2. REFER TO ONE LINE DEMOLITION SHEETS 70-E-110 THROUGH 70-E-112 FOR ADDITIONAL REQUIREMENTS.
3. FOLLOW ALL LOCKOUT/TAGOUT AND ARC FLASH SAFETY PROCEDURES.
4. ALL SITE CONDITIONS INCLUDING, BUT NOT LIMITED TO, EQUIPMENT, FIELD WIRING, CONDUIT AND STRUCTURES SHALL BE FIELD VERIFIED PRIOR TO WORK COMMENCING.
5. ALL AREAS AFFECTED BY DEMOLITION WORK SHALL BE PATCHED AND REPAIRED TO MATCH EXISTING CONDITIONS.
6. CONTRACTOR SHALL RETURN ALL DEMOLISHED ITEMS TO OWNER IN WORKING CONDITIONS.

KEY NOTES

1. DISCONNECT AND REMOVE CONDUCTORS BETWEEN PNL70241 AND PLC70299. DISCONNECT AND REMOVE CONDUCTORS BETWEEN PNL70241 AND 208V PANEL PNL70271. DISCONNECT AND REMOVE EXPOSED CONDUIT AND CONDUCTORS BETWEEN PNL70241 AND ALL INSTRUMENTS (PIT70241, LSHH70241, LSLL70241, LSH70241, LSL70241, SV70231, SV70241). DISCONNECT AND REMOVE CONDUITS BETWEEN PNL70241 AND HANDHOLES (HH70-P1 AND HH70-S1).
2. DISCONNECT AND REMOVE CONDUCTORS BETWEEN PNL70242 AND PLC70299. DISCONNECT AND REMOVE CONDUCTORS BETWEEN PNL70242 AND 208V PANEL PNL70272. DISCONNECT AND REMOVE EXPOSED CONDUIT AND CONDUCTORS BETWEEN PNL70242 AND ALL INSTRUMENTS (PIT70242, LSHH70242, LSLL70242, LSH70242, LSL70242, SV70232, SV70242). DISCONNECT AND REMOVE CONDUITS BETWEEN PNL70242 AND HANDHOLES (HH70-P1 AND HH70-S1).
3. DEMOLISH GROUND WIRE AND TAPS CONNECTED TO PANEL PNL70241 AND PNL70242. TAKE CARE NOT TO DAMAGE GROUND RING.
4. DEMOLISH GROUND WIRE AND TAPS CONNECTED TO MOTORS. TAKE CARE NOT TO DAMAGE GROUND RING.
5. CUT AND COIL 10' OF GROUND WIRE FROM DEMOLISHED BONDING TAPS.
6. DISCONNECT AND REMOVE CONDUCTORS BETWEEN MOTOR P70221 AND MCC70291. DISCONNECT AND REMOVE CONDUCTORS BETWEEN TB70221 AND MCC70291. DISCONNECT AND REMOVE EXPOSED CONDUIT AND CONDUCTORS BETWEEN TB70221 AND ALL ANCILARY EQUIPMENT ASSOCIATED WITH MOTOR (SPACE HEATER, HS70221, FSL7061, JB70261). DISCONNECT AND REMOVE CONDUITS BETWEEN MOTOR/TB70221 AND HANDHOLES (HH70-P1 AND HH70-S1).
7. DISCONNECT AND REMOVE CONDUCTORS BETWEEN MOTOR P70222 AND MCC70292. DISCONNECT AND REMOVE CONDUCTORS BETWEEN TB70222 AND MCC70292. DISCONNECT AND REMOVE EXPOSED CONDUIT AND CONDUCTORS BETWEEN TB70222 AND ALL ANCILARY EQUIPMENT ASSOCIATED WITH MOTOR (SPACE HEATER, HS70222, FSL7062, JB70262). DISCONNECT AND REMOVE CONDUITS BETWEEN MOTOR/TB70222 AND HANDHOLES (HH70-P1 AND HH70-S1).
8. DISCONNECT AND REMOVE CONDUCTORS BETWEEN MOTOR P70223 AND MCC70293. DISCONNECT AND REMOVE CONDUCTORS BETWEEN TB70223 AND MCC70293. DISCONNECT AND REMOVE EXPOSED CONDUIT AND CONDUCTORS BETWEEN TB70223 AND ALL ANCILARY EQUIPMENT ASSOCIATED WITH MOTOR (SPACE HEATER, HS70223, FSL7063, JB70263). DISCONNECT AND REMOVE CONDUITS BETWEEN MOTOR/TB70223 AND HANDHOLES (HH70-P1 AND HH70-S1).

KEY PLAN



REGISTERED PROFESSIONAL ENGINEER ZANE E. WILSTERMAN No. E22550 Exp. 12-31-24 ELECTRICAL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

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DESIGNED BY : ZEW
PROJ. MGR. : TRB

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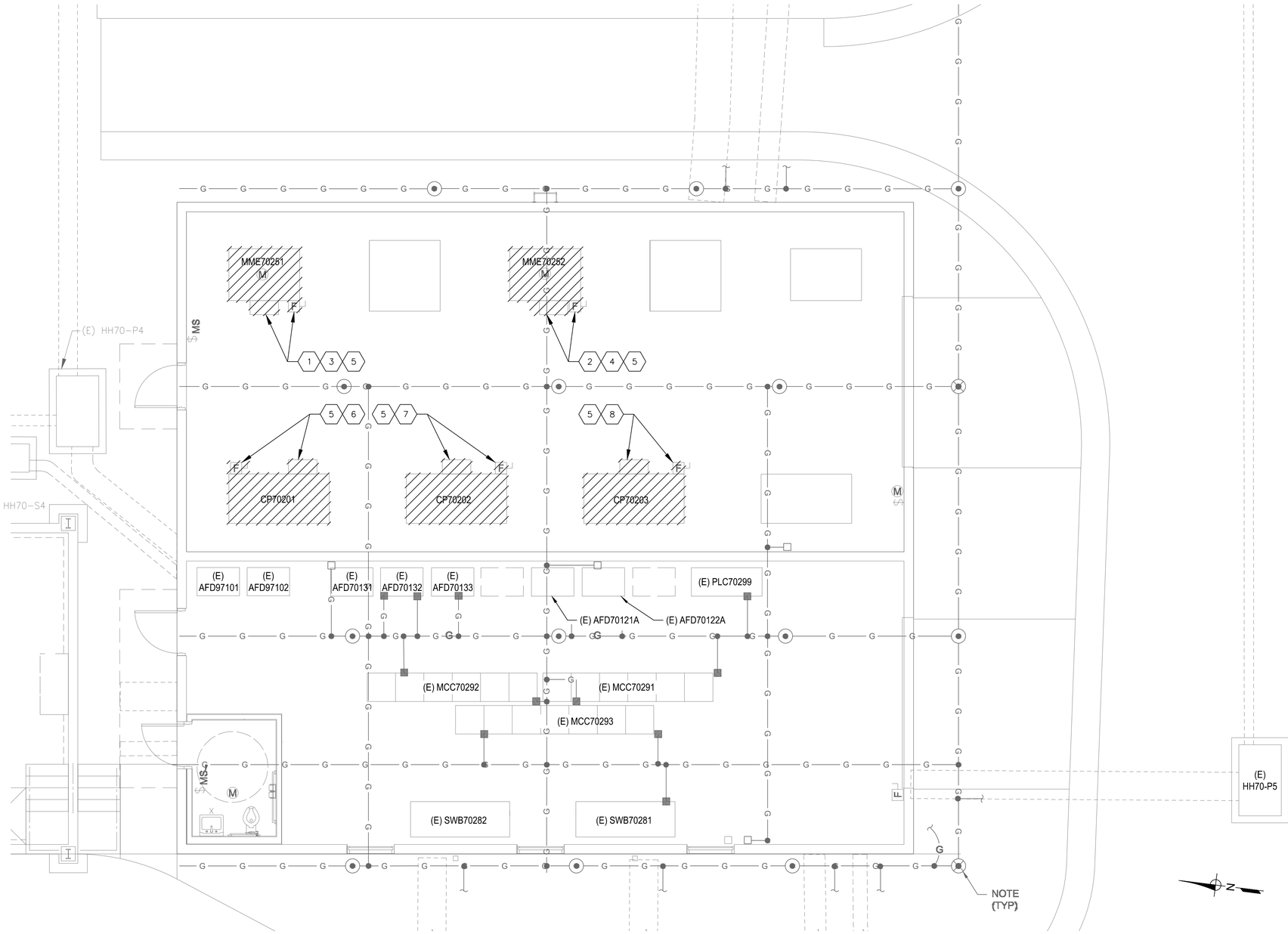
Ukiah Utilities A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DAFT AREA DEMO PLAN

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-E-100
SHEET NUMBER 61 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-70-E-100.dwg 7-17-23 09:33:57 AM sbarber



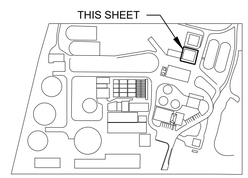
GENERAL NOTES

1. REFER TO DEMOLITION SHEETS 70-D-001 THROUGH 70-D-015 FOR ADDITIONAL REQUIREMENTS.
2. REFER TO ONE LINE DEMOLITION SHEETS 70-E-110 THROUGH 70-E-112 FOR ADDITIONAL REQUIREMENTS.
3. FOLLOW ALL LOCKOUT/TAGOUT AND ARC FLASH SAFETY PROCEDURES.
4. ALL SITE CONDITIONS INCLUDING, BUT NOT LIMITED TO, EQUIPMENT, FIELD WIRING, CONDUIT AND STRUCTURES SHALL BE FIELD VERIFIED PRIOR TO WORK COMMENCING.
5. ALL AREAS AFFECTED BY DEMOLITION WORK SHALL BE PATCHED AND REPAIRED TO MATCH EXISTING CONDITIONS.
6. CONTRACTOR SHALL RETURN ALL DEMOLISHED ITEMS TO OWNER IN WORKING CONDITIONS.

KEY NOTES

1. DISCONNECT AND REMOVE CONDUCTORS BETWEEN PNL70251 AND PLC70299. DISCONNECT AND REMOVE CONDUCTORS BETWEEN PNL70251 AND MCC70291. DISCONNECT AND REMOVE EXPOSED CONDUIT AND CONDUCTORS CONNECTING TO PNL70251.
2. DISCONNECT AND REMOVE CONDUCTORS BETWEEN PNL70252 AND PLC70299. DISCONNECT AND REMOVE CONDUCTORS BETWEEN PNL70252 AND MCC70291. DISCONNECT AND REMOVE EXPOSED CONDUIT AND CONDUCTORS CONNECTING TO PNL70252.
3. SALVAGE PNL70251 AND DISCONNECT SWITCH TO OWNER.
4. SALVAGE PNL70252 AND DISCONNECT SWITCH TO OWNER.
5. DISCONNECT AND REMOVE EXPOSED PORTION OF BONDING CONDUCTOR. CUT FLUSH WITH FLOOR OR SLEEVE.
6. DISCONNECT AND REMOVE CONDUCTORS BETWEEN AIR COMPRESSOR CP70201 AND MCC70291 INCLUDING DISCONNECT SWITCH. DISCONNECT AND REMOVE CONDUCTORS BETWEEN LCP70201 AND PLC70299. DISCONNECT AND REMOVE ALL EXPOSED CONDUIT ASSOCIATED WITH AIR COMPRESSOR CP70201. SALVAGE DISCONNECT SWITCH TO OWNER.
7. DISCONNECT AND REMOVE CONDUCTORS BETWEEN AIR COMPRESSOR CP70202 AND MCC70292 INCLUDING DISCONNECT SWITCH. DISCONNECT AND REMOVE CONDUCTORS BETWEEN LCP70202 AND PLC70299. DISCONNECT AND REMOVE ALL EXPOSED CONDUIT ASSOCIATED WITH AIR COMPRESSOR CP70202. SALVAGE DISCONNECT SWITCH TO OWNER.
8. DISCONNECT AND REMOVE CONDUCTORS BETWEEN AIR COMPRESSOR CP70203 AND MCC70293 INCLUDING DISCONNECT SWITCH. DISCONNECT AND REMOVE CONDUCTORS BETWEEN LCP70203 AND PLC70299. DISCONNECT AND REMOVE ALL EXPOSED CONDUIT ASSOCIATED WITH AIR COMPRESSOR CP70203. SALVAGE DISCONNECT SWITCH TO OWNER.

KEY PLAN



REGISTERED PROFESSIONAL ENGINEER
ZANE E. WILSTERMAN
No. E22550
Exp. 12-31-24
ELECTRICAL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

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A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DAFT BUILDING DEMO PLAN

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-E-101
SHEET NUMBER 62 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-70-E-101.dwg 7-17-23 09:35:35 AM sbarber

MATCHLINE -REFER TO 01-E-103 FOR CONTINUATION

P70-00-01 P70-01-01
P70-00-02 P70-02-01
P70-03-01

C70-00-01 C70-01-01
C70-00-02 C70-01-02
C70-00-06 C70-02-01
C70-00-07 C70-02-02

CONDUITS INDICATED IN THESE DUCTBANKS ARE EXISTING, BEING RENAMED WITH NEW CONDUCTORS INSTALLED

SAF NO.2 POLYMER SYSTEM
CONTROL PANEL
C70-05-01
C70-05-02
P70-05-01

SAF NO.1 POLYMER SYSTEM
CONTROL PANEL
C70-04-01
C70-04-02
P70-04-01

(E) HH70-P4
(E) HH70-S4
MS
P70-02-01
P70-01-01
(E) PLC70299
P70-05-01
P70-04-01
(E) MCC70292
(E) MCC70291
(E) MCC70293
(E) SWB70282
(E) SWB70281
(E) HH70-P5

ENLARGED DAFT BUILDING PLAN
SCALE: 1/4=1'-0"

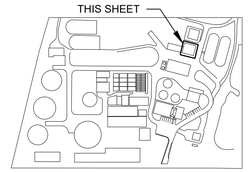
GENERAL NOTES

1. REFER TO DRAWING 00-E-003 THROUGH 00-E-004 FOR ELECTRICAL INSTALLATION DETAILS.
2. REFER TO DRAWING 00-E-006 FOR CONDUIT AND CABLE REQUIREMENTS.
3. FOLLOW ALL LOCKOUT/TAGOUT AND ARC FLASH SAFETY PROCEDURES.
4. AN 18-INCH BOUNDARY ALONG DAFT BASIN WALLS AND 18-INCH HIGH BY 10-FEET HORIZONTAL BOUNDARY BEYOND DAFT BASIN WALL ENVELOPES ARE CLASSIFIED AS A CLASS 1, DIVISION 2 AREAS AND SHALL CONFORM TO ALL APPLICABLE CODES.

KEY NOTES

1. INSTALL CONDUIT(S) ALONG CEILING.
2. INSTALL NEW CONDUITS FROM POLYMER SYSTEM CONTROL PANEL'S TO PLC31299.
3. INSTALL NEW CONDUITS FROM POLYMER SYSTEM CONTROL PANEL'S TO MCC.
4. CORE DRILL EXISTING BLOCK WALL FOR EACH CONDUIT. INSTALL GROUT OR APPROVED FIRESTOPPING METHOD.
5. INSTALL NEW CONDUITS FROM POLYMER SYSTEM CONTROL PANEL'S TO MCC.
6. INSTALL POWER FEEDER FOR SAF/FROTH GENERATOR SKID. NO1 IN EXISTING CONDUIT P70221A. RE-NAME WITH NEW TAG NUMBER.
7. INSTALL POWER FEEDER FOR SAF/FROTH GENERATOR SKID. NO1 IN EXISTING CONDUIT P70222A. RE-NAME WITH NEW TAG NUMBER.

KEY PLAN



REGISTERED PROFESSIONAL ENGINEER ZANE E. WILSTERMAN No. E22550 Exp. 12-31-24 ELECTRICAL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

THIS LINE IS 1 INCH AT FULL SCALE IF NOT SCALE ACCORDINGLY

SCALE : AS NOTED
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST Water. Engineered.

Ukiah Utilities A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
ENLARGED DAFT BUILDING PLAN

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-E-102
SHEET NUMBER 63 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-70-E-102.dwg 7-17-23 09:36:10 AM sbarber

MATCHLINE REFER TO DRAWING 70-E-104 FOR CONTINUATION

DISSOLVED AIR
FLOATING
THICKER 1

CLASS 1, DIV.2
GROUP D

P70-02-03
24"X"24"X6" TYPE 4X 316 SS INSTRUMENT JB
C70-01-01
C70-01-02
C70-02-01
C70-02-02
P70-00-02
C70-00-06
C70-00-07
SAF GENERATOR SKID No. 1 SURFACTANT TOTE
C70-02-02
P70-02-02
P70-02-03
C70-01-01
C70-01-02
PANEL 70273A
100A 120/208V 3ø
P70-03-03
P70-02-03
P70-01-03
SAF/FROTH GENERATOR SKID No.1
3
TRANSFORMER 70273A
15KVA 480-120V/208 3ø
P70-02-01
P70-01-01
P70-03-01
P70-03-02
P70-01-02
FE
FLOC MIXER No.1 MOTOR
2
C70-00-03
C70-00-01
C70-00-02
1
FIT FIT FIT
2
WEST CHEMICAL INJECTION SYSTEM
2 C70-00-04
C70-00-05 2
FE
FE
2
2
M
HANDHOLE HH70-P1A
P70-00-01
P70-02-01
P70-00-02
P70-03-01
P70-01-01
HANDHOLE HH70-S1A
P70-00-01
4
C70-00-01
C70-01-01
C70-00-02
C70-01-02
C70-00-06
C70-02-01
C70-00-07
C70-02-02
(E)HANDHOLE HH70-P1
(E)HANDHOLE HH70-S1

MATCHLINE REFER TO DRAWING 70-E-102 FOR CONTINUATION

N

SAF AREA PLAN-ENLARGED AREA

SCALE: 1/2"=1'-0"

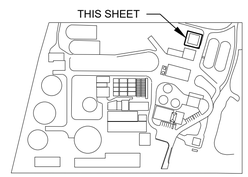
GENERAL NOTES

1. REFER TO DRAWINGS 00-E-003 THROUGH 00-E-004 FOR ELECTRICAL INSTALLATION DETAILS.
2. REFER TO DRAWING 00-E-006 FOR CONDUIT AND CABLE REQUIREMENTS.
3. FOLLOW ALL LOCKOUT/TAGOUT AND ARC FLASH SAFETY PROCEDURES.
4. AN 18-INCH BOUNDARY ALONG DAFT BASIN WALLS AND 18-INCH HIGH BY 10-FEET HORIZONTAL BOUNDARY BEYOND DAFT BASIN WALL ENVELOPES ARE CLASSIFIED AS A CLASS 1, DIVISION 2 AREAS AND SHALL CONFORM TO ALL APPLICABLE CODES.

KEY NOTES

1. INSTALL FLOWMETER TRANSMITTERS ON EQUIPMENT RACK. REFER TO FLOWMETER EQUIPMENT RACK DETAIL ON SHEET 00-E-004.
2. ROUTE CONDUIT. UNDERGROUND TO FLOW TUBE AS INDICATED. STUB UP CONDUIT. 12" ABOVE F.F. AND ROUTE SEALTITE TO INSTRUMENT.
3. INSTALL CONDUIT BETWEEN DISCONNECT SWITCH AND SAF GENERATOR. INSTALL CONDUIT ALONG WALL OR CEILING TO SAF GENERATOR. PENETRATE SIDE OF CONTROL PANEL.
4. RELOCATED LIGHT POLE. LOCK OUT AND TAG OUT CIRCUIT SERVING LIGHTS. REMOVE CIRCUIT BACK TO PULL BOX HH70-P1 COIL EXISTING WIRE INSIDE PULL BOX UNTIL NEW ELECTRICAL PULL BOX IS INSTALLED. RE-PULL EXISTING CIRCUIT INTO NEW ELECTRICAL PULL BOX HH70-P1A. SPLICE WIRE AND EXTEND TO RELOCATED AREA LIGHT POLE LOCATIONS VIA CONDUITS P70-00-01 AND P70-00-02.

KEY PLAN



REGISTERED PROFESSIONAL ENGINEER
ZANE E. WILSTERMAN
No. E22550
Exp. 12-31-24
ELECTRICAL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

THIS LINE IS 1 INCH
AT FULL SCALE
IF NOT SCALE ACCORDINGLY

SCALE : AS NOTED
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

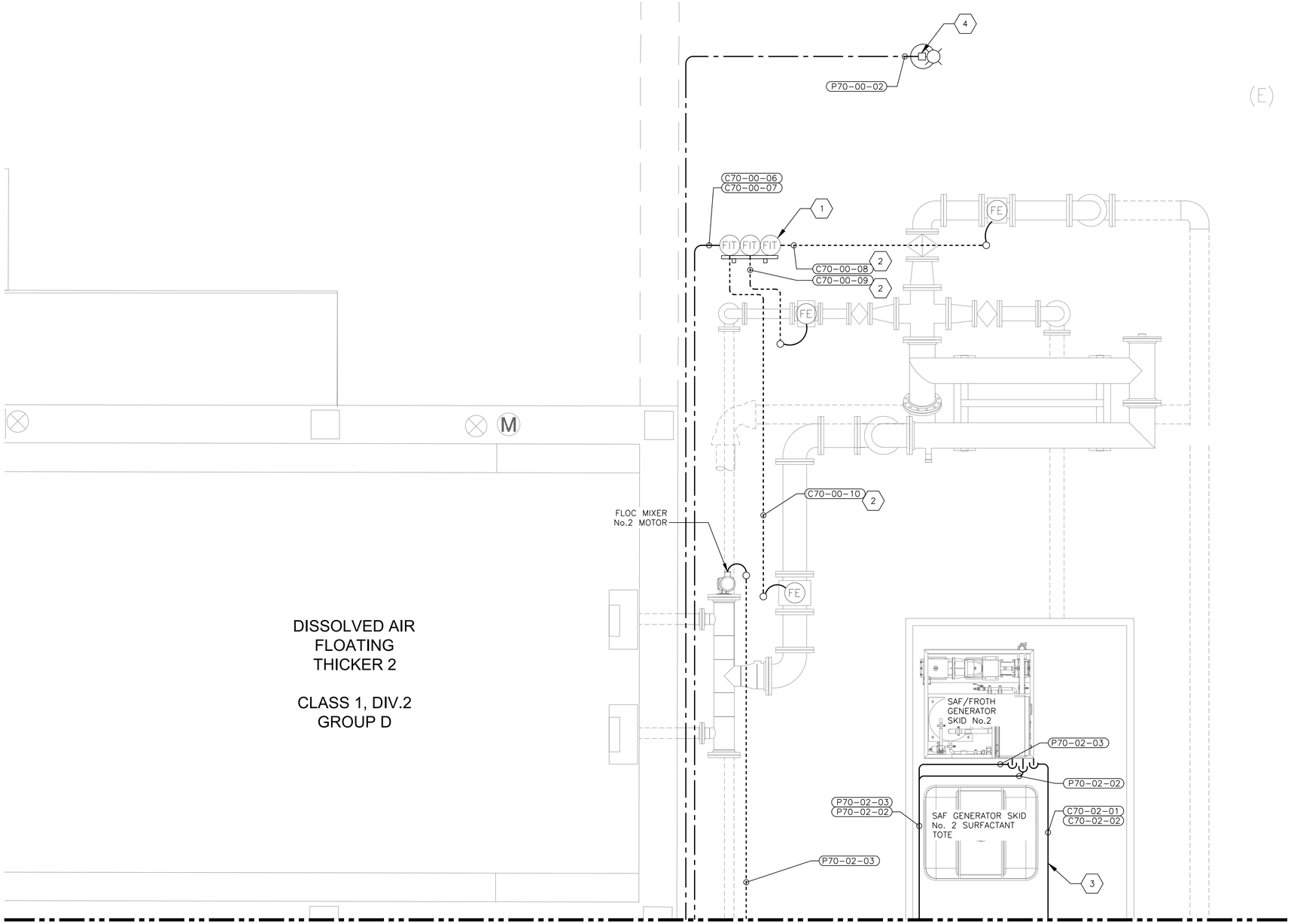
WEST YOST
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
ENLARGED SAF 1 AREA PLAN

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-E-103
SHEET NUMBER 64 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-70-E-103.dwg 7-17-23 09:51:53 AM sbarber



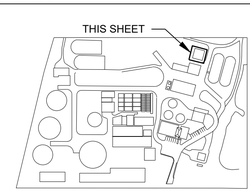
GENERAL NOTES

1. REFER TO DRAWING 00-E-003 THROUGH 00-E-004 FOR ELECTRICAL INSTALLATION DETAILS.
2. REFER TO DRAWING 00-E-006 FOR CONDUIT AND CABLE REQUIREMENTS.
3. FOLLOW ALL LOCKOUT/TAGOUT AND ARC FLASH SAFETY PROCEDURES.
4. AN 18-INCH BOUNDARY ALONG DAFT BASIN WALLS AND 18-INCH HIGH BY 10-FEET HORIZONTAL BOUNDARY BEYOND DAFT BASIN WALL ENVELOPES ARE CLASSIFIED AS A CLASS 1, DIVISION 2 AREAS AND SHALL CONFORM TO ALL APPLICABLE CODES.

KEY NOTES

1. INSTALL FLOWMETER TRANSMITTERS ON EQUIPMENT RACK. REFER TO FLOWMETER EQUIPMENT RACK DETAIL ON SHEET 00-E-004.
2. ROUTE CONDUIT UNDERGROUND TO FLOW TUBE AS INDICATED. STUB UP CONDUIT 12" ABOVE F.F. AND ROUTE SEALTITE TO INSTRUMENT.
3. INSTALL CONDUIT BETWEEN DISCONNECT SWITCH AND SAF GENERATOR. INSTALL CONDUIT ALONG WALL OR CEILING TO SAF GENERATOR. PENETRATE SIDE OF CONTROL PANEL.
4. RELOCATED LIGHT POLE. LOCK OUT AND TAG OUT CIRCUIT SERVING LIGHTS. TRACE WIRE FROM LIGHTING POLES BACK TO PANEL PNL70272 AND LOCK OUT AND TAG OUT PRIOR TO DISCONNECTING. REMOVE CIRCUIT BACK TO PULL BOX HH70-P1 COIL EXISTING WIRE INSIDE PULL BOX UNTIL NEW ELECTRICAL PULL BOX IS INSTALLED. RE-PULL EXISTING CIRCUIT INTO NEW ELECTRICAL HH70-P1A. SPLICE WIRES AND EXTEND TO RELOCATED AREA LIGHT POLE LOCATIONS VIA CONDUITS P70-00-01 AND P70-00-02.

KEY PLAN



REGISTERED PROFESSIONAL ENGINEER
ZANE E. WILSTERMAN
No. E22550
Exp. 12-31-24
ELECTRICAL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

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IF NOT SCALE ACCORDINGLY

SCALE : AS NOTED
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
ENLARGED SAF 2 AREA PLAN

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-E-104
SHEET NUMBER 65 OF 89
REVISION

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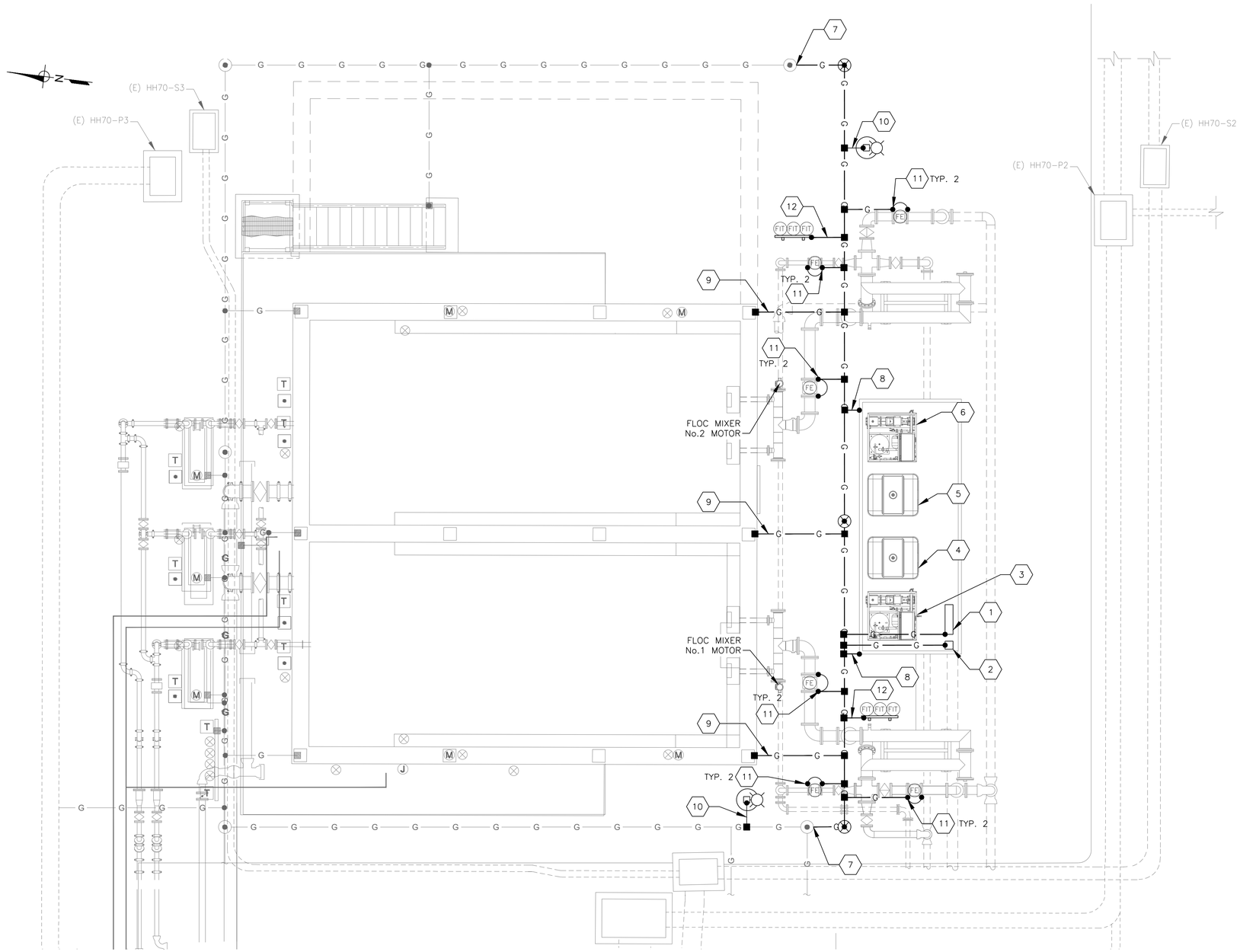

N
(E) HH70-S3
(E) HH70-P3
(E) HH70-P2
(E) HH70-S2
FLOC MIXER No.2 MOTOR
FLOC MIXER No.1 MOTOR
TYP. 2
TYP. 2
TYP. 2

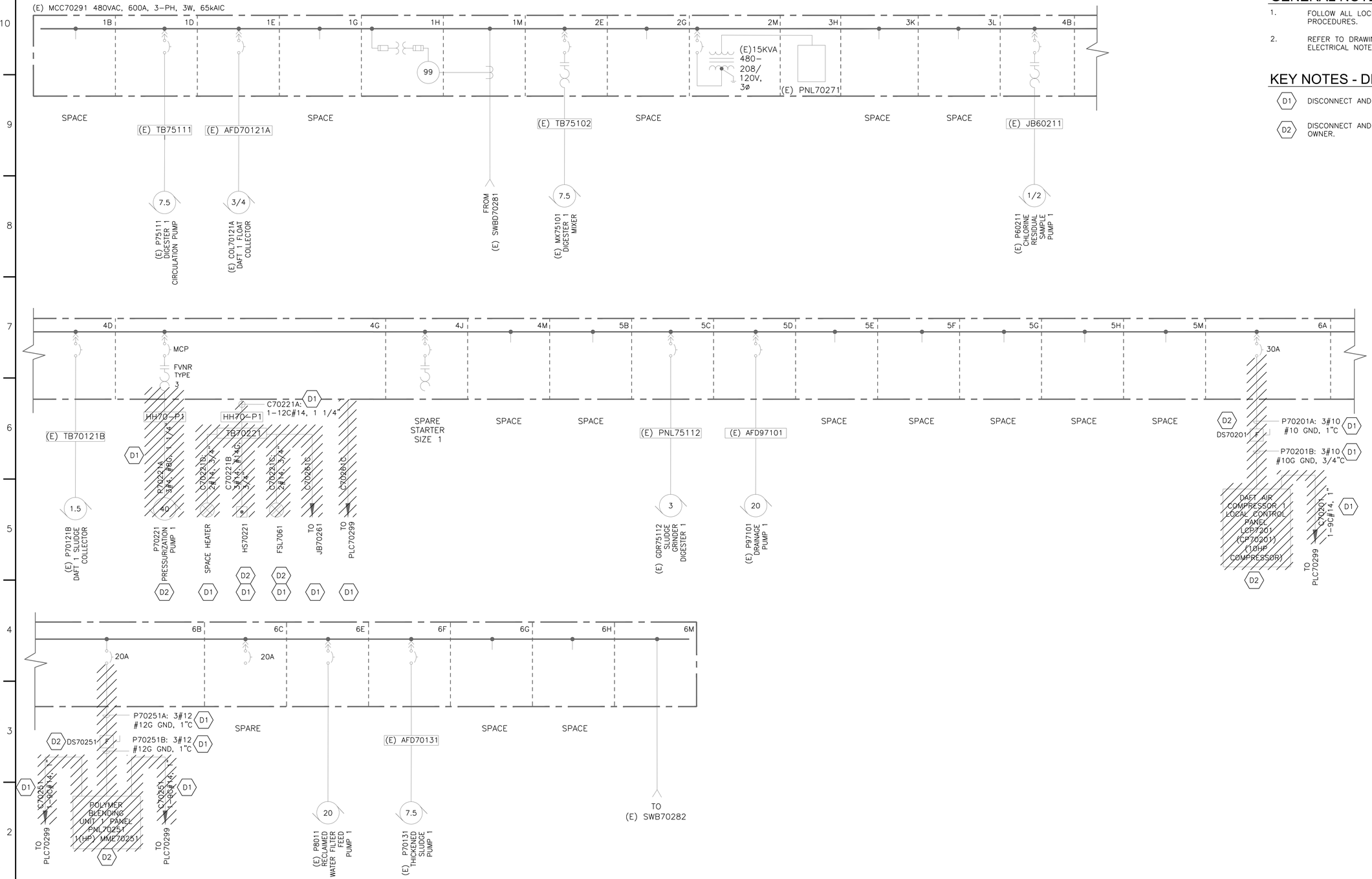
GENERAL NOTES

1. FOLLOW ALL LOCKOUT/TAGOUT AND ARC FLASH SAFETY PROCEDURES.
2. REFER TO DRAWING 00-E-002 FOR GENERAL PROJECT ELECTRICAL NOTES AND DEMOLITION NOTES.

KEY NOTES - DEMO NOTES

D1 DISCONNECT AND REMOVE CONDUCTORS BACK TO SOURCE.

D2 DISCONNECT AND REMOVE ELECTRICAL EQUIPMENT. SALVAGE TO OWNER.



NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

REGISTERED PROFESSIONAL ENGINEER ZANE E. WILSTERMAN No. E22550 Exp. 12-31-24 ELECTRICAL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

THIS LINE IS 1 INCH AT FULL SCALE IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

WEST YOST Water. Engineered.

Ukiah Utilities A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MCC 70291 ONE LINE DEMO

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-E-110
SHEET NUMBER 67 OF 89
REVISION

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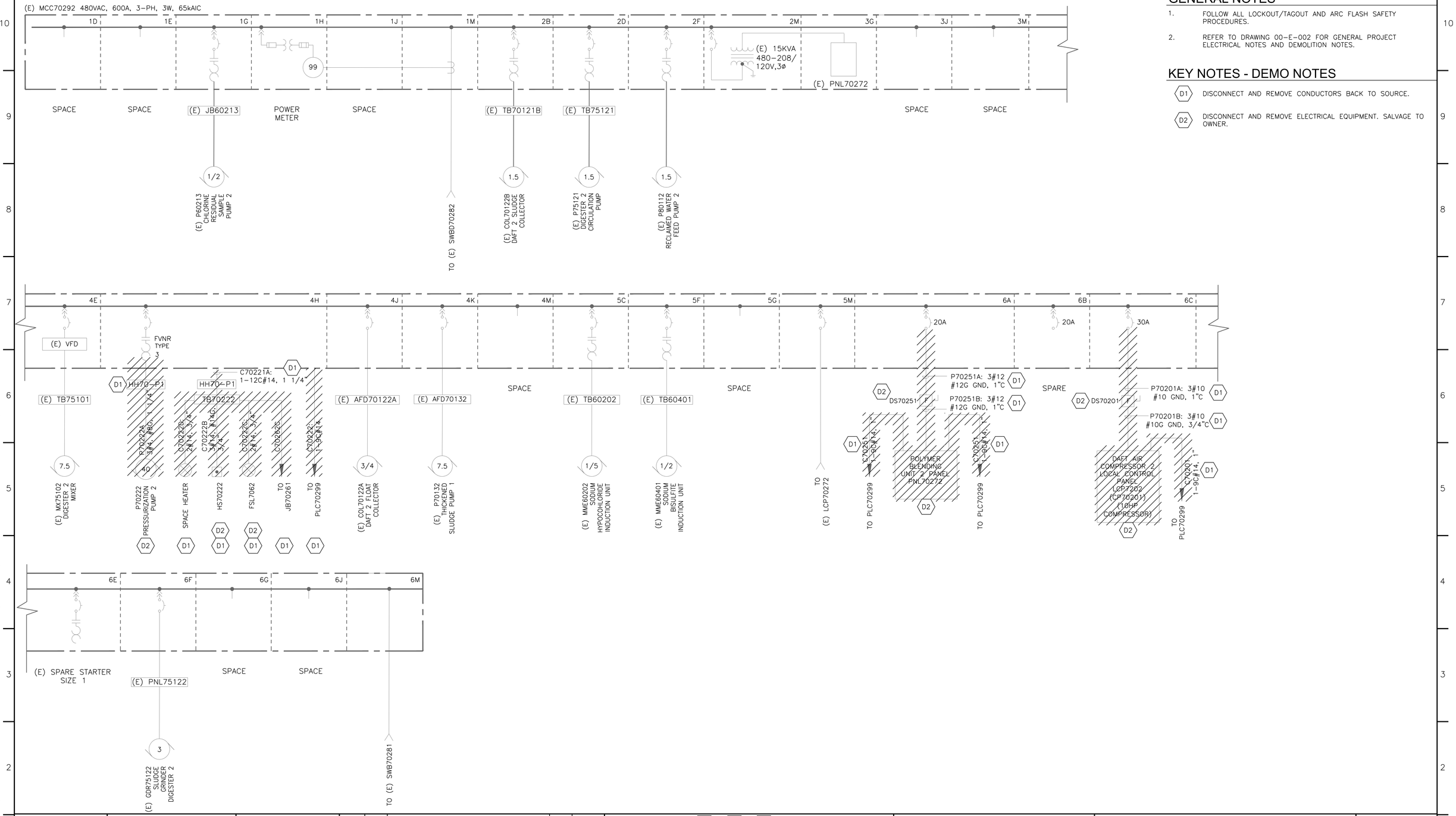
GENERAL NOTES

1. FOLLOW ALL LOCKOUT/TAGOUT AND ARC FLASH SAFETY PROCEDURES.
2. REFER TO DRAWING 00-E-002 FOR GENERAL PROJECT ELECTRICAL NOTES AND DEMOLITION NOTES.

KEY NOTES - DEMO NOTES

D1 DISCONNECT AND REMOVE CONDUCTORS BACK TO SOURCE.

D2 DISCONNECT AND REMOVE ELECTRICAL EQUIPMENT. SALVAGE TO OWNER.



NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

REGISTERED PROFESSIONAL ENGINEER ZANE E. WILSTERMAN No. E22550 Exp. 12-31-24 ELECTRICAL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

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SCALE : NONE
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

WEST YOST Water. Engineered.

Ukiah Utilities A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MCC 70292 ONE LINE DEMO

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-E-111
SHEET NUMBER 68 OF 89
REVISION

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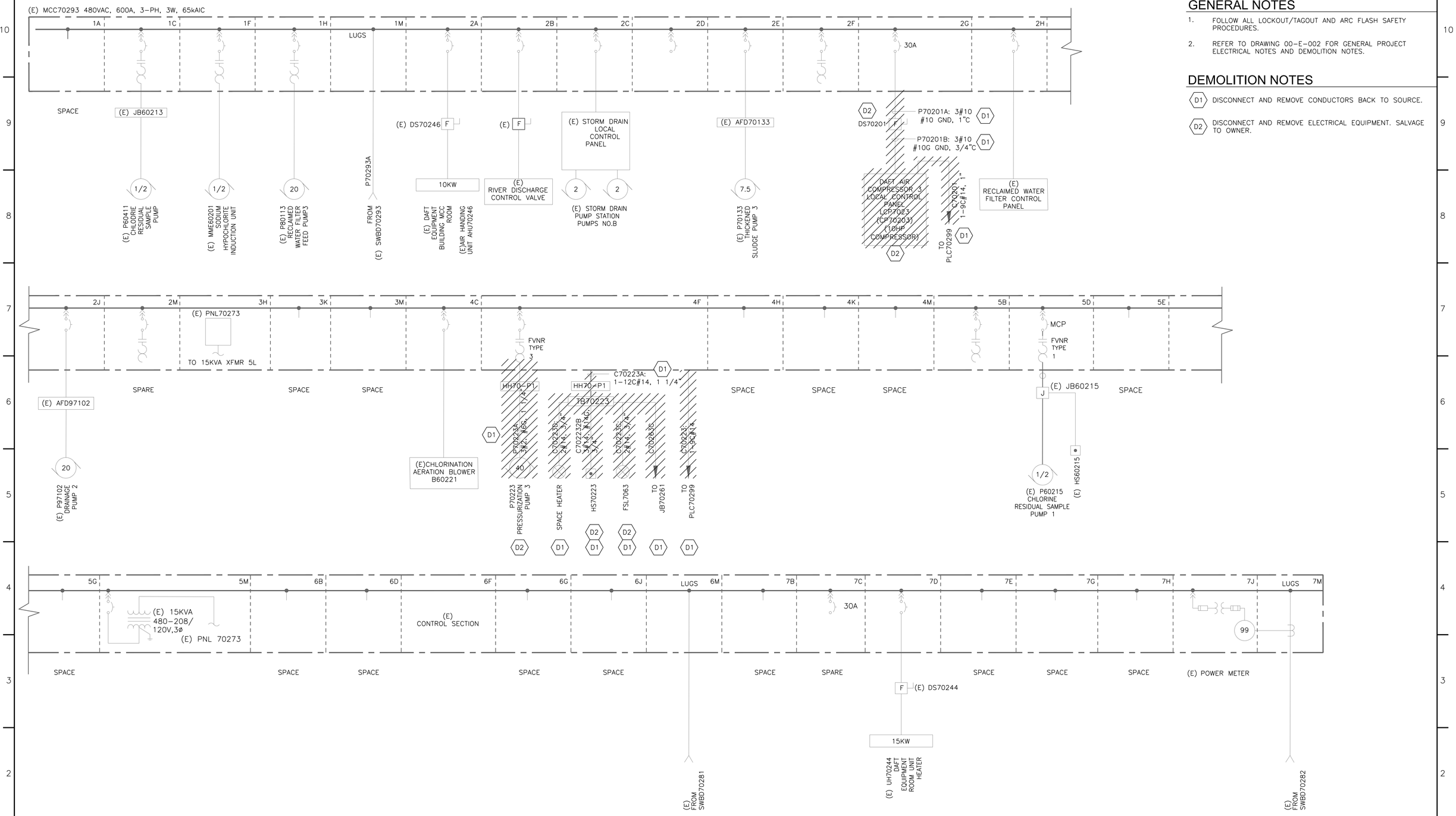
GENERAL NOTES

1. FOLLOW ALL LOCKOUT/TAGOUT AND ARC FLASH SAFETY PROCEDURES.
2. REFER TO DRAWING 00-E-002 FOR GENERAL PROJECT ELECTRICAL NOTES AND DEMOLITION NOTES.

DEMOLITION NOTES

D1 DISCONNECT AND REMOVE CONDUCTORS BACK TO SOURCE.

D2 DISCONNECT AND REMOVE ELECTRICAL EQUIPMENT. SALVAGE TO OWNER.



NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

REGISTERED PROFESSIONAL ENGINEER ZANE E. WILSTERMAN No. E22550 Exp. 12-31-24 ELECTRICAL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

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SCALE : NONE
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

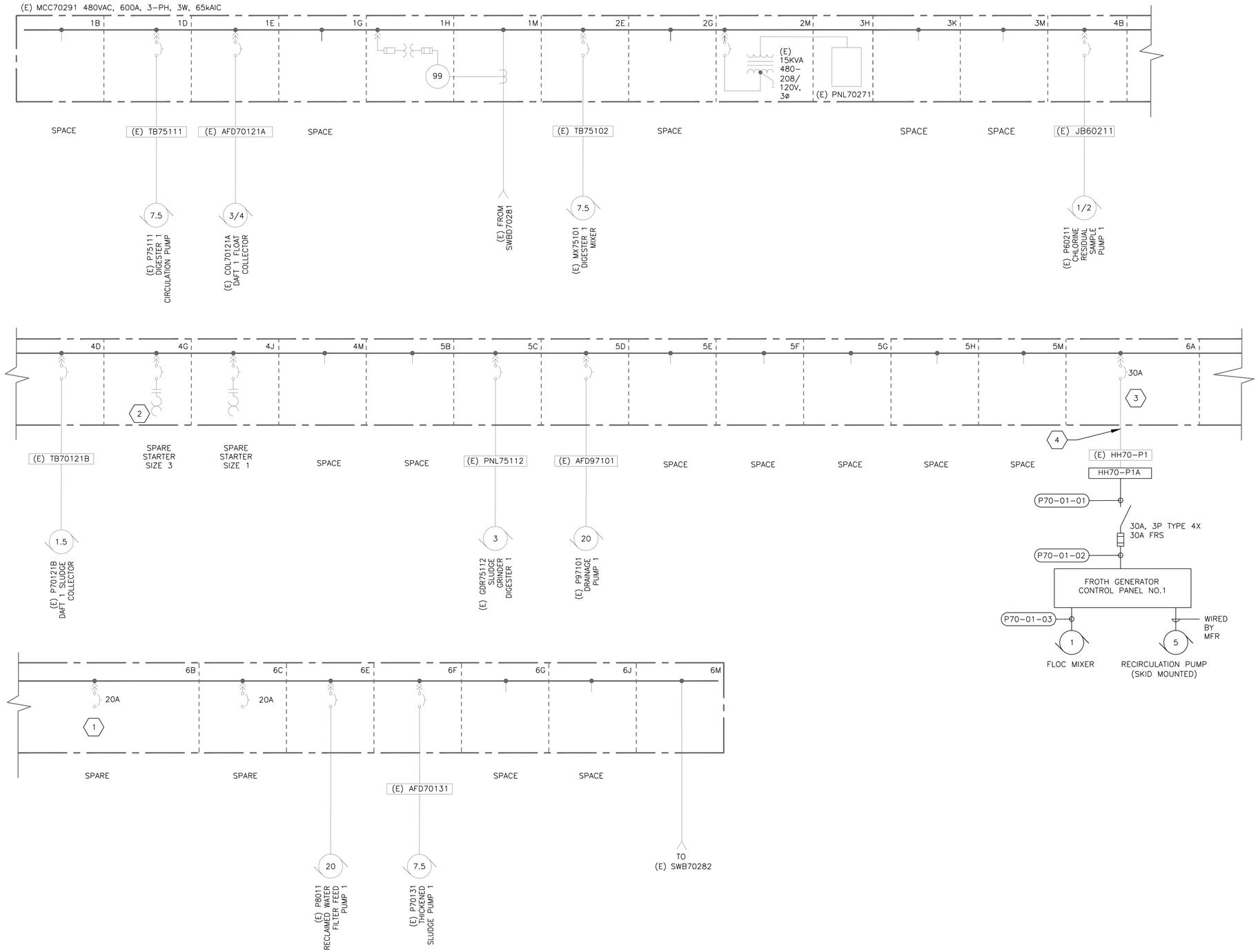
WEST YOST Water. Engineered.

Ukiah Utilities A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MCC 70293 ONE LINE DEMO

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-E-112
SHEET NUMBER 69 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-70-E-112.dwg 7-17-23 09:40:01 AM sbarber



GENERAL NOTES

1. REFER TO DRAWING 00-E-006 FOR CONDUIT AND CABLE REQUIREMENTS.
2. REFER TO DRAWING 70-E-110 FOR DEMOLITION INFORMATION.
3. FOLLOW ALL LOCKOUT/TAGOUT AND ARC FLASH SAFETY PROCEDURES.

KEY NOTES

1. EXISTING BREAKER WILL BECOME A SPARE BREAKER.
2. EXISTING STARTER WILL BECOME A SPARE STARTER.
3. RE-USE EXISTING BREAKER.
4. INSTALL POWER FEEDER FOR SAF/FROTH GENERATOR SKID. NO1 IN EXISTING CONDUIT P70221A. RE-NAME CONDUIT WITH NEW TAG NUMBER.

REGISTERED PROFESSIONAL ENGINEER ZANE E. WILSTERMAN No. E22550 Exp. 12-31-24 ELECTRICAL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

THIS LINE IS 1 INCH AT FULL SCALE IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

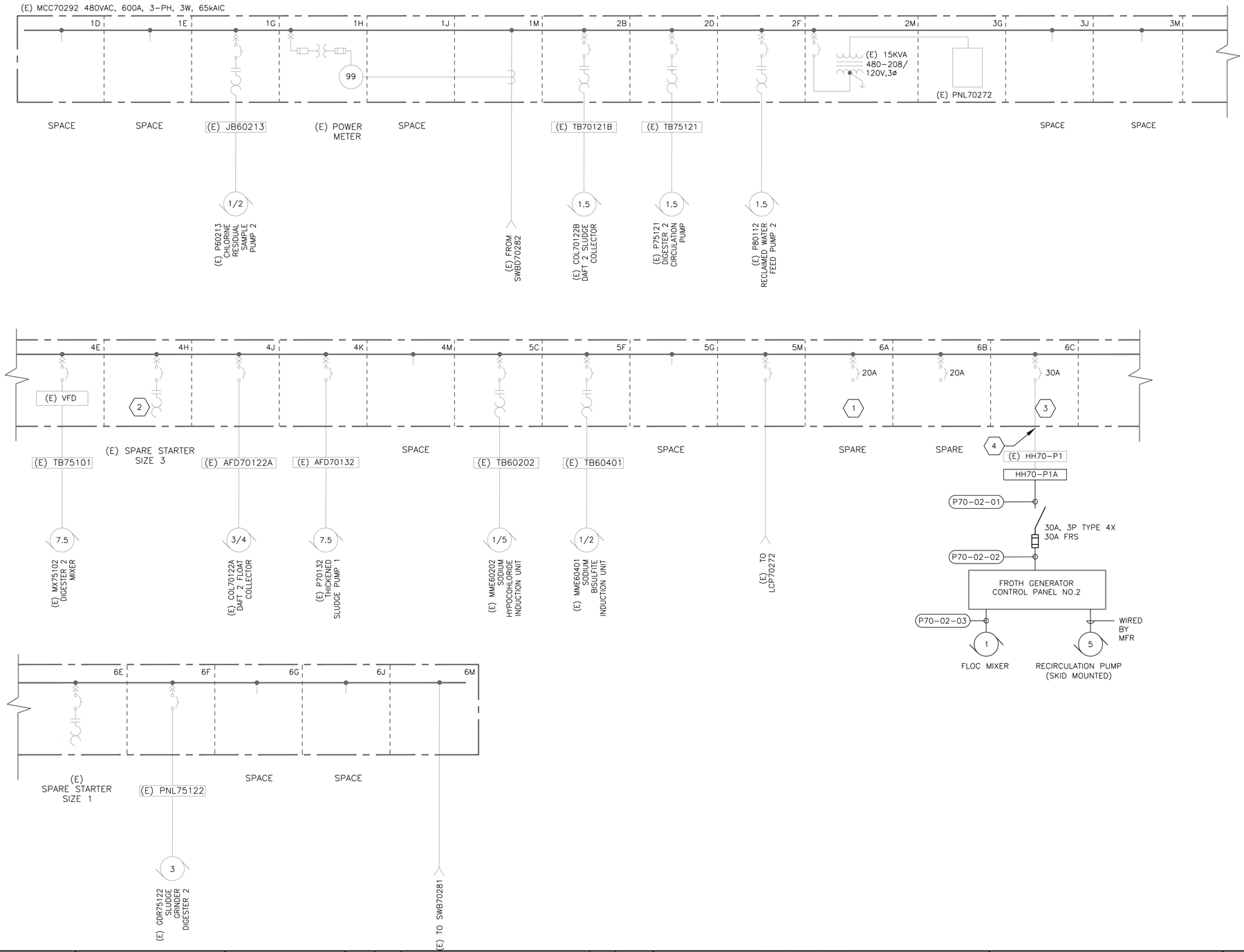
WEST YOST Water. Engineered.

Ukiah Utilities A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MCC 70291 ONE LINE

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-E-113
SHEET NUMBER 70 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-70-E-113.dwg 7-17-23 09:40:36 AM sbarber



GENERAL NOTES

1. REFER TO DRAWING 00-E-006 FOR CONDUIT AND CONDUCTOR REQUIREMENTS.
2. REFER TO DRAWING 70-E-111 FOR DEMOLITION INFORMATION.
3. FOLLOW ALL LOCKOUT/TAGOUT AND ARC FLASH SAFETY PROCEDURES.

KEY NOTES

1. EXISTING BREAKER WILL BECOME A SPARE BREAKER.
2. EXISTING STARTER WILL BECOME A SPARE STARTER.
3. RE-USE EXISTING BREAKER.
4. INSTALL POWER FEEDER FOR SAF/FROTH GENERATOR SKID NO.2 IN EXISTING CONDUIT 70222A. RE-NAME EXISTING CONDUIT WITH NEW TAG NUMBER.

REGISTERED PROFESSIONAL ENGINEER ZANE E. WILSTERMAN No. E22550 Exp. 12-31-24 ELECTRICAL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

THIS LINE IS 1 INCH AT FULL SCALE IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

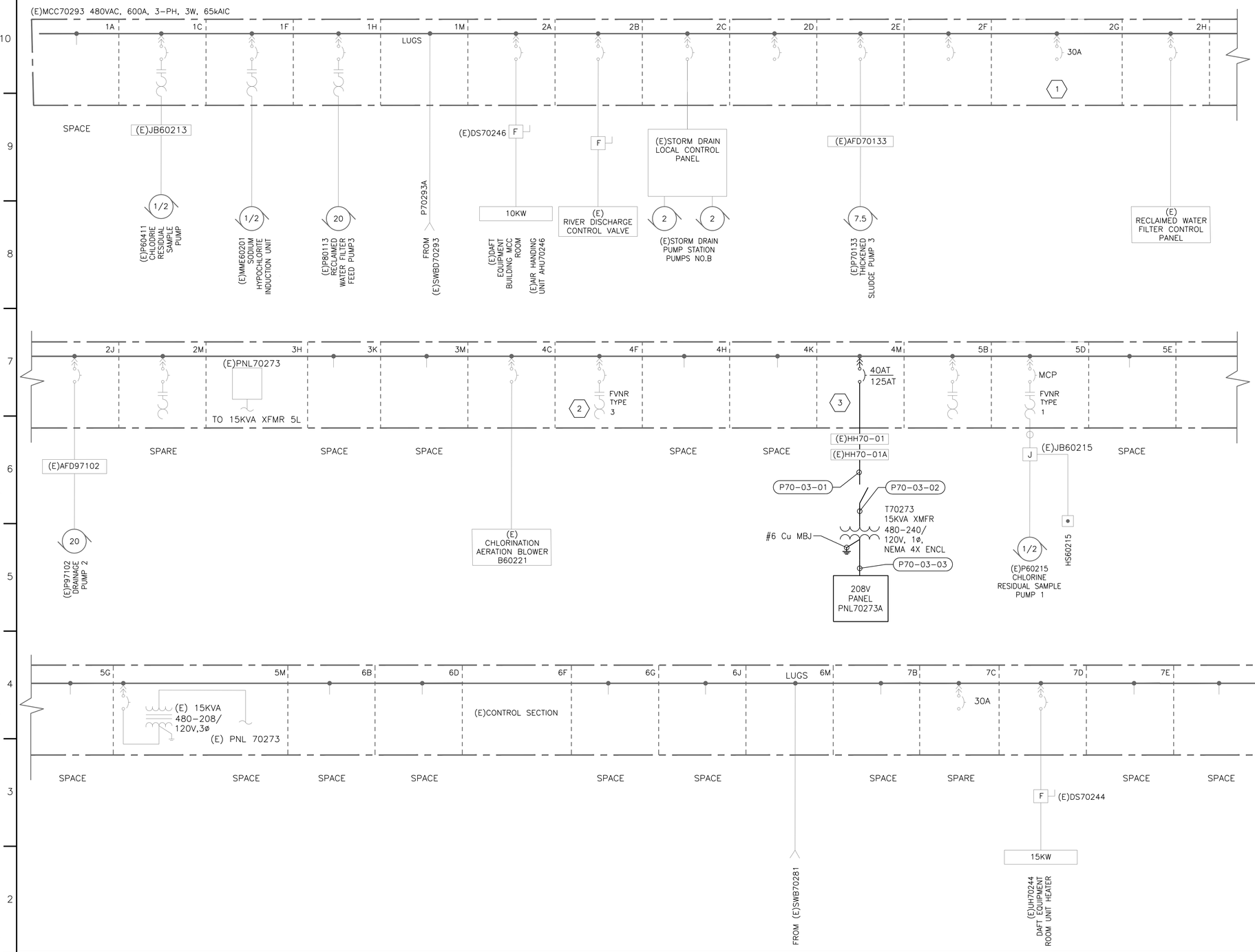
WEST YOST Water. Engineered.

Ukiah Utilities A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MCC 70292 ONE LINE

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-E-114
SHEET NUMBER 71 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-70-E-114.dwg 7-17-23 09:41:04 AM sbarber



GENERAL NOTES

1. REFER TO DRAWING 00-E-006 FOR CONDUIT AND CONDUCTOR REQUIREMENTS.
2. REFER TO DRAWING 70-E-112 FOR DEMOLITION INFORMATION.
3. FOLLOW ALL LOCKOUT/TAGOUT AND ARC FLASH SAFETY PROCEDURES.

KEY NOTES

1. EXISTING BREAKER WILL BECOME A SPARE BREAKER.
2. EXISTING STARTER WILL BECOME A SPARE STARTER.
3. INSTALL NEW BREAKER AND MCC UNIT BUCKET WITH THROUGH DOOR HANDLE AND DOOR. SALVAGE EXISTING DOOR TO CITY.

REGISTERED PROFESSIONAL ENGINEER ZANE E. WILSTERMAN No. E22550 Exp. 12-31-24 ELECTRICAL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

THIS LINE IS 1 INCH
AT FULL SCALE
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SCALE : NONE
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

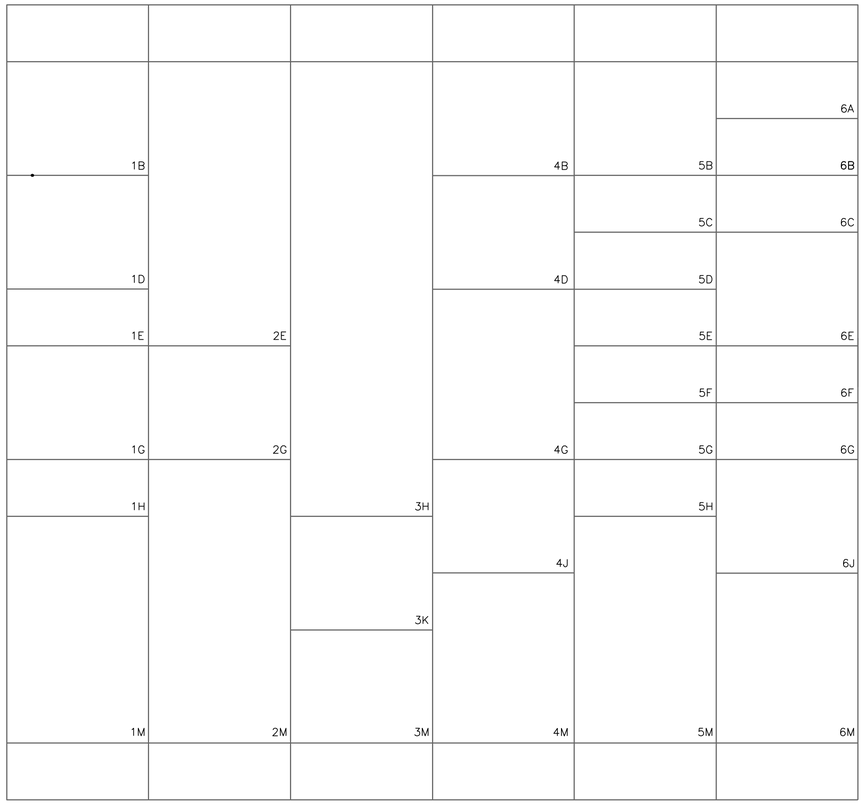
WEST YOST
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MCC 70293 ONE LINE

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-E-115
SHEET NUMBER 72 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-70-E-115.dwg 7-17-23 09:41:37 AM sbarber



(E) MCC 70291 - ELEVATION VIEW

MCC SECTION TABLE

TAG#	INSCRIPTION	NOTES
1B	SPACE	
1D	DIGESTER 1 CIRCULATION PUMP P75111	
1E	DAFT 1 FLOAT COLLECTOR COL70121A	
1G	SPACE	
1H	POWER MONITOR	
1M	FROM SWBD70281	
2E	DIGESTER 1 MIXER MX75101	
2G	SPACE	
2M	PNL70271 TRANSFORMER	
3H	PNL70271	
3K	SPACE	
3M	SPACE	
4B	CHLORIDE RESIDUAL SAMPLE PUMP 1 P60211	
4D	DAFT 1 SLUDGE COLLECTOR COL70121B	
4G	SPARE SIZE 3 STARTER ~~PRESSURIZATION PUMP 1 P70221~~	2
4J	SPARE STARTER-SIZE 1	
4M	SPACE	
5B	SPACE	
5C	SLUDGE GRINDER DIGESTER GDR75112	
5D	DRAINAGE PUMP 1 P97101	
5E	SPACE	
5F	SPACE	
5G	SPACE	
5H	SPACE	
5M	SPACE	
6A	SAF FROTH GENERATOR NO.1 ~~LCP-70201~~	3
6B	SPARE BREAKER ~~PNL70251 BREAKER~~	1
6C	20A SPARE BREAKER	
6E	RECLAIMED WATER FILTER FEED PUMP 1 P80111	
6F	THICKENED SLUDGE PUMP 1 P70131	
6G	SPACE	
6J	SPACE	
6M	FROM SWBD70282	

GENERAL NOTES

1. REFER TO DRAWING 00-E-005 FOR CONDUIT AND CONDUCTOR REQUIREMENTS.
2. REFER TO DRAWINGS 70-E-110 AND 70-E-113 FOR ADDITIONAL REQUIREMENTS.

KEY NOTES

1. INSTALL BLACK 1" X 3" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
   LINE 1: "SPARE"
   LINE 2: "BREAKER"
2. INSTALL BLACK 1" X 3" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
   LINE 1: "SPARE SIZE 3"
   LINE 2: "STARTER"
3. INSTALL BLACK 1" X 3" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
   LINE 1: "SAF/FROTH GENERATOR NO.1"
   LINE 2: "STARTER"

LOAD SUMMARY MCC70291

FAC/AREA (ZONE/SITE):
EQUIPMENT LOCATION: ELECTRICAL EQUIPMENT ROOM TAG NAME:
FED FROM: SWBD70281 AND SWBD70282
MANUFACTURER: SQUARE D MODEL 6

VOLTS/PHASE/WIRE: MAIN
BUS RATING: MAIN BREAKER
(AMPS): AIC RATING (AMPS):
MAIN LUG ONLY:

SECTION NO.	EQUIPMENT NAME	KVA	HP	FLA	BREAKER TRIP RATING
1D	P75111		7.5	11.0	
1E	COL70121A		3/4	1.6	
1H	POWER MONITOR	0.05		0.1	
2E	MX75101		7.5	11.0	
2M	PNL70271 TRANSFORMER	15		18.0	
4B	P60211		1/2	1.1	
4D	COL70121B		1.5	3	
5C	GDR75112		3	4.8	
5D	P97101		20	27.0	
6A	FROTH GENERATOR CONTROL PANEL NO.1		7.5	11.0	
6E	P8011		20.0	27.0	
6F	P70131		7.5	11.0	
SUBTOTAL:				126.6	
PLUS 25% OF LARGEST MOTOR:				6.8	
TOTAL AMPS				133.4	

REGISTERED PROFESSIONAL ENGINEER
ZANE E. WILSTERMAN
No. E22550
Exp. 12-31-24
ELECTRICAL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

THIS LINE IS 1 INCH
AT FULL SCALE
IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MCC 70291 ELEVATION

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-E-116
SHEET NUMBER 73 OF 89
REVISION

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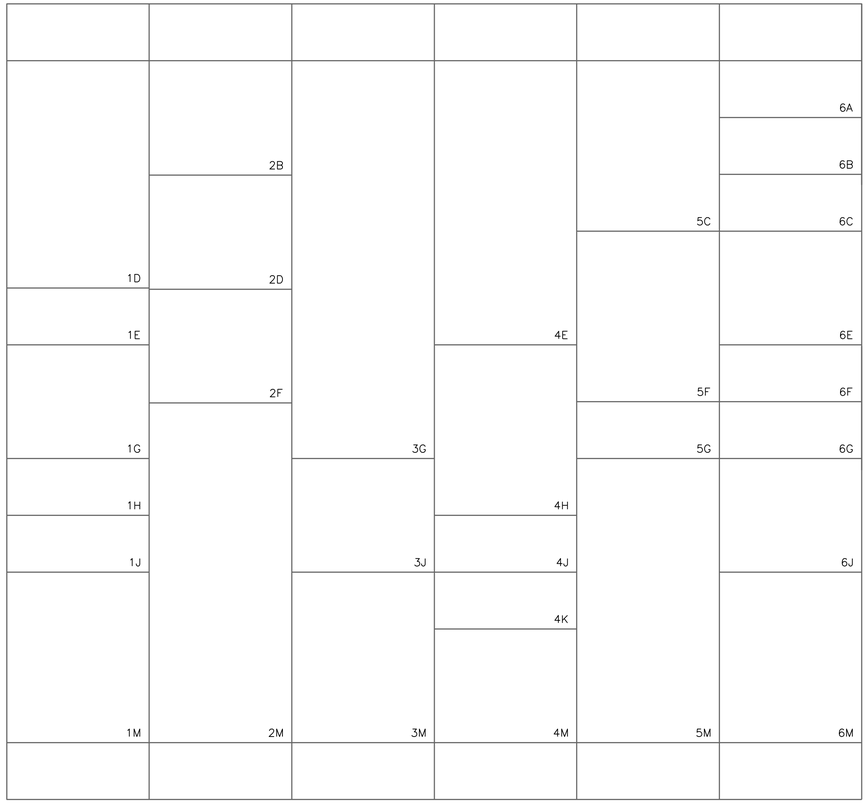

(E) MCC 70292 - ELEVATION VIEW

MCC SECTION TABLE

TAG#	INSCRIPTION	NOTES
1D	SPACE	
1E	SPACE	
1G	CHLORIDE RESIDUAL SAMPLE PUMP 2 P60213	
1H	POWER MONITOR	
1J	SPACE	
1M	TO SWB70282	
2B	DAFT 2 SLUDGE COLLECTOR COL70122B	
2D	DIGESTER 2 CIRCULATION PUMP P75121	
2F	RECLAIMED WATER FILTER FEED PUMP 2 P80112	
2L	PNL70272 TRANSFORMER	
3G	PNL70272	
3J	SPACE	
3M	SPACE	
4E	DIGESTER 2 MIXER MX75102	
4H	SPARE SIZE 3 STARTER ~~PRESSURIZATION PUMP 2 P70222~~	(2)
4J	DAFT 2 FLOAT COLLECTOR COL70122A	
4K	THICKENED SLUDGE PUMP 2 P70132	
4M	SPACE	
5C	SODIUM HYPOCHLORITE INDUCTION UNIT MME60202	
5F	SODIUM BISULFATE INDUCTION UNIT MME60401	
5G	SPACE	
5M	LCP70272	
6A	SPARE BREAKER ~~LCP70272~~	(1)
6B	20A SPARE BREAKER	
6C	SAF FROTH GENERATOR NO.2 ~~LCP70202~~	(3)
6E	SPARE STARTER – SIZE 1	
6F	DIGESTER – 2 SLUDGE GRINDER GDR75122	
6G	SPACE	
6J	SPACE	
6M	TO SWB70281	

GENERAL NOTES

1. REFER TO DRAWING 01-E-006 FOR CONDUIT AND CABLE REQUIREMENTS.
2. REFER TO DRAWINGS 70-E-111 AND 70-E-114 FOR ADDITIONAL REQUIREMENTS.

KEY NOTES

(1) INSTALL BLACK 1" X 3" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
LINE 1: "SPARE"
LINE 2: "BREAKER"

(2) INSTALL BLACK 1" X 3" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
LINE 1: "SPARE SIZE 3"
LINE 2: "STARTER"

(3) INSALL BLACK 1" X 3" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
LINE 1: "SAF/FROTH GENERATOR NO.2"
LINE 2: "BREAKER"

LOAD SUMMARY MCC70292

FAC/AREA (ZONE/SITE):
EQUIPMENT LOCATION: ELECTRICAL EQUIPMENT ROOM TAG NAME:
FED FROM: SWBD70281 AND SWBD70282
MANUFACTURER: SQUARE D MODEL 6

VOLTS/PHASE/WIRE: MAIN
BUS RATING: MAIN BREAKER
(AMPS): AIC RATING (AMPS):
MAIN LUG ONLY:

SECTION NO.	EQUIPMENT NAME	KVA	HP	FLA	BREAKER TRIP RATING
1G	P60213		1/2	1.1	
1H	POWER MONITOR	0.05		0.1	
2B	COL70122B		1.5	3	
2D	P75121		1.5	3	
2F	P80112		1.5	3	
2M	PNL70272 TRANSFORMER	15		18	
4E	MX75102		7.5	11	
4J	COL70122A		3/4	1.6	
4K	P70132		7.5	11	
5C	MME60202		1/5	1	
5F	MME60401		1/2	1.1	
6C	FROTH GENERATOR CONTROL PANEL NO.2		7.5	11	
6F	GDR75122		3	4.8	
SUBTOTAL:				69.7	
PLUS 25% OF LARGEST MOTOR:				6.8	
TOTAL AMPS				76.5	

REGISTERED PROFESSIONAL ENGINEER
ZANE E. WILSTERMAN
No. E22550
Exp. 12-31-24
ELECTRICAL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

THIS LINE IS 1 INCH
AT FULL SCALE
IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MCC 70292 ELEVATION

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-E-117
SHEET NUMBER 74 OF 89
REVISION

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A	1A	2A	3H	4C	5B	6B	7B
B		2B			5D	6D	7C
C	1C	2C		4F	5E	6F	7D
D		2D			5G	6G	7E
E	1F	2E		4H		6J	7G
F		2F					7H
G	1H	2G	3K	4K			7J
H		2H					
J		2J					
K							
L	1M	2M	3M	4M	5M	6M	7M
M							

(E) MCC 70293 - ELEVATION VIEW

MCC SECTION TABLE

TAG#	INSCRIPTION	NOTES
1A	SPACE	
1C	CHLODRIE RESIDUAL SAMPLE PUMP P60411	
1F	SODIUM HYPOCHLORITE INDUCTION UNIT 1 MME60201	
1H	RECLAIMED WATER FILTER FEED PUMP 3 P80113	
1M	TO SWB70281	
2A	DAFT EQUIP. AIR HANDLING AHU70246	
2B	RIVER DISC. CTR. VALVE	
2C	STORM DRAIN PUMP STATION	
2D	FUTURE AFD 70123A BREAKER	
2E	THICKENED/PUMP #3 P70133	
2F	PB – 3 FUTURE PNL BREAKER	
2G	SPARE BREAKER ~~LCP70273~~	1
2H	RECLAIMED WATER FILTER CONTROL PANEL	
2J	DRAINAGE PUMP #2 P97102	
2M	SPARE	
3H	PNL70273	
3K	SPACE	
3M	SPACE	
4C	CHLORINATION AERATION BLOWER B60221	
4F	SPARE SIZE 3 STARTER ~~PRESSURIZATION PUMP 3 P70223~~	2
4H	SPACE	
4K	SPACE	
4M	SAF CONNEX TRANSFORMER (T70273)	3
5B	DAFT 3 SLUDGE COLLECTOR FUTURE	
5D	CHLORINE RESIDUAL PUMP P60215	
5E	SPACE	
5G	SPACE	
5M	15 KVA XFMR	

MCC SECTION TABLE

TAG#	INSCRIPTION	NOTES
6B	SPACE	
6D	SPACE	
6F	CONTROL SECTION	
6G	SPACE	
6J	SPACE	
6M	TO SWB70281	
7B	SPACE	
7C	30A SPARE BREAKER	
7D	DAFT EQUIP. ROOM UNIT HEATER UH70244	
7E	SPACE	
7G	SPACE	
7H	SPACE	
7J	POWER METER	
7M	TO SWB70282	

GENERAL NOTES

1. REFER TO DRAWING 00-E-006 FOR CONDUIT AND CABLE REQUIREMENTS.
2. REFER TO DRAWINGS 70-E-112 AND 70-E-115 FOR ADDITIONAL REQUIREMENTS.

KEY NOTES

(1) INSTALL BLACK 1" X 3" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
LINE 1: "SPARE"
LINE 2: "BREAKER"

(2) INSTALL BLACK 1" X 3" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
LINE 1: "SPARE SIZE 3"
LINE 2: "STARTER"

(3) INSTALL BLACK 1" X 3" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
LINE 1: "SAF CONNEX PANEL"
LINE 2: "XFMR T70273"

LOAD SUMMARY MCC70293

FAC/AREA (ZONE/SITE):
EQUIPMENT LOCATION: ELECTRICAL EQUIPMENT ROOM TAG NAME:
FED FROM: SWBD70281 AND SWBD70282
MANUFACTURER: SQUARE D MODEL 6

VOLTS/PHASE/WIRE: MAIN
BUS RATING: MAIN BREAKER
(AMPS): AIC RATING (AMPS):
MAIN LUG ONLY:

SECTION NO.	EQUIPMENT NAME	KVA	HP	FLA	BREAKER TRIP RATING
1C	CHLORINE RESIDUAL SAMPLE PUMP P60411		0.5	1.1	
1F	SODIUM HYPOCHLORITE INDUCTION UNIT 1 MEME60201		0.5	1.1	
1H	RECLAIMED WATER FILTER FEED PUMP 3 P80113		20	27.0	
2A	DAFT EQUIP. BUILDING MCC ROOM AIR HANDLING UNIT AHU70246		13.4	17.0	
2B	RIVER DISCHARGE CONTROL VALVE		1	2.1	
2C	STROM DRAIN PUMP STATION NO. B CONTROL PANEL		4	6.8	
2E	THICKENED SLUDGE PUMP 3 P70133		7.5	11.0	
2H	RECLAIMED WATER FILTER CONTROL PANEL PNL80144				
2J	DRAINAGE PUMP 2 P97102		20	27.0	
4C	CHLORINATION AERATION BLOWER B60221		20	27.0	
4M	15KVA TRANSFORMER TO PANEL 70273A	15		31.3	
5D	CHLORINE RESIDUAL SAMPLE PUMP P60215		0.5	1.1	
5M	15KVA TRANSFOMER- PANEL 70273	15		18.0	
7D	DAFT EQUIP. BUILDING MCC ROOM UNIT HEATER UH70244		20.1	27.0	
7J	POWER METER	0.05		0.1	
SUBTOTAL:				305.1	
PLUS 25% OF LARGEST MOTOR:				6.8	
TOTAL AMPS				311.9	

REGISTERED PROFESSIONAL ENGINEER
ZANE E. WILSTERMAN
No. E22550
Exp. 12-31-24
ELECTRICAL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

THIS LINE IS 1 INCH
AT FULL SCALE
IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MCC 70293 ELEVATION

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-E-118
SHEET NUMBER 75 OF 89
REVISION

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GENERAL NOTES

1. REFER TO DRAWING 00-E-006 FOR CONDUIT AND CABLE REQUIREMENTS.
2. REFER TO DRAWINGS 70-E-113 AND 70-E-114 FOR ADDITIONAL REQUIREMENTS.
3. FOLLOW ALL LOCKOUT/TAGOUTMAND ARC FLASH SAFETY PROCEDURES.

KEY NOTES

1. INSTALL 30A/1P BOLT-ON BREAKER TO MATCH EXISTING PANELBOARD MFR (SQUARE D), TYPE (NQOD), AND AIC RATING (10,000A). REVISE PANEL SCHEDULE TO READ "SAF NO.1 POLYMER SYSTEM".
2. INSTALL 30A/1P BOLT-ON BREAKER TO MATCH EXISTING PANELBOARD MFR (SQUARE D), TYPE (NQOD), AND AIC RATING (10,000A). REVISE PANEL SCHEDULE TO READ "SAF NO.2 POLYMER SYSTEM".
3. DISCONNECT AND REMOVE EXISTING CONDUCTORS TO THIS CIRCUIT AS INDICATED ON THE DEMOLITION PLAN. REVISE PANEL SCHEDULE TO READ "SPARE".

VOLTS 120/208V | PANEL **(E) PNL70271** | MAIN 225A MCB
PHASE 3PH, 4 WIRE | LOCATION MCC 70291 | BUS 225A
A.I.C. | FED FROM 15KVA TRANFORMER IN 2L | MOUNTING SURFACE

LOAD							VA LOAD									LOAD
DESCRIPTION	LTG	REC	MTR	AMP	P	NO.	A	B	C	NO.	AMP	P	MTR	REC	LTG	DESCRIPTION
P60321 (PNL60321)				20	1	1	600									
							50			2	20	1				FIT7521
P60341 (PNL60341)				20	1	3		100								
								300		4	20	1				CV75142 (PNL75142)
LTG-DIGESTERS	1			20	1	5			173							
									50	6	20	1				FIT7041
RECPT-DIGESTERS		1		20	1	7	180									
							160			8	20	1			1	DAFT DECK LIGHTING
FIT6031				20	1	9		50								
								1800		10	20	1			1	DAFT TANK LIGHTING
LIT6011				20	1	11			50							
									360	12	20	1		2		DAFT TANK RECEPT
PNL60301				20	1	13	600									
							1120			14	20	1			1	DAFT BLDG INT LTG
PNL60331				20	1	15		600								
								1120		16	20	1			1	DAFT BLDG INT LTG
FIT8001				20	1	17			50							
									720	18	20	1		4		DAFT BLDING INT RECEP
FIT8002				20	1	19	50									
							720			20	20	1		4		DAFT BLDING INT RECEP
MME60212 (AIT6004)				20	1	21		100								
								250		22	20	1				RR MINI WTR HTR
SPARE				20	1	23			0							
									100	24	20	1				LCP70272
SPARE				20	1	25	0									
							0			26	20	1				PNL70241
SPARE				20	1	27		0								
								0		28	20	1				CV70261
SPARE				20	1	29			0							
									500	30	20	1				PLC70299
SAF NO.1 POLYMER SYSTEM			**1**	**30**	**1**	31	**1440**									
							--			32						SPACE
SPACE						33		--								
								--		34						SPACE
SPACE						35			2160							
									--	36						SPACE
SPACE						37	--									
							10			38						
SPACE						39		--								
								10		40						
SPACE						41			--							
									10	42	60	3				SURGE PROTECTION DEVICE
13183	VA - 3PH TOTAL CONNECTED						4930	4080	4173							
7973	VA - CONTINUOUS X 0.25 (*)			=			1993	VA								
1980	VA - GP RECEPTS X (**)			=			1980	VA								
3230	VA - NON-CONTIN X 1.00			=			3230	VA								
(* INCLUDES LIGHTING & LARGEST MOTOR)									16783	FEEDER TOTAL (VA) (***)						
(** 100% OF FIRST 10KW + 50% OF BALANCE)									11	TOTAL RECEPTACLES						
(*** THREE TIMES LARGEST PHASE + 25% OF CONTINUOUS - 50% OF REC VA OVER 10KVA)									47	LARGEST PHASE CURRENT						3/8/2023 10:37
COMMENT:																

VOLTS 120/208V | PANEL **(E) PNL70272** | MAIN 225A MCB
PHASE 3PH, 4 WIRE | LOCATION MCC 70292 | BUS 225A
A.I.C. | FED FROM 15KVA TRANFORMER IN 2L | MOUNTING SURFACE

LOAD							VA LOAD									LOAD
DESCRIPTION	LTG	REC	MTR	AMP	P	NO.	A	B	C	NO.	AMP	P	MTR	REC	LTG	DESCRIPTION
P60322 (PNL60322)				20	1	1	600									
							50			2	20	1				FIT7522
P60342 (PNL60342)				20	1	3		100								
								300		4	20	1				CV75142 (PNL75142)
FIT6033				20	1	5			50							
									50	6	20	1				FIT7545
FIT6002				20	1	7	50									
							50			8	20	1				FIT7026
LIT6001				20	1	9		50								
								50		10	20	1				FIT7042
LIT6012				20	1	11			50							
									590	12	20	1			1	NORTH DAFT AREA LTG
LIT9711				20	1	13	50									
							360			14	20	1		2		NORTH DAFT AREA REC
LTG-ROADWAY	1			20	1	15		604								
								590		16	20	1			1	SOUTH DAFT AREA LTG
SPARE				20	1	17			0							
									360	18	20	1		2		SOUTH DAFT AREA REC
HEAT TRACE				20	1	19	500									
							285			20	20	1			1	DAFT BLDG EXT LTG
SPACE						21		--								
								295		22	20	1			1	DAFT BLDG ARE LTG
SPACE						23			--							
									180	24	20	1		1		DAFT BLDG AREA REC
SAMPLE PUMP				20	1	25	1200									
							500			26	20	1				~~PNL70242~~ SPARE
SPACE						27		--								
								50		28	20	1				~~CV70262~~ SPARE
MME60214 (AIT6005)				20	1	29			100							
									600	30	20	1				SMP60216
SAF NO.2 POLYMER SYSTEM			**1**	**30**	**1**	31	**1440**									
							--			32						SPACE
SPACE						33		--								
								--		34						SPACE
SPACE						35			--							
									--	36						SPACE
SPACE						37	--									
							10			38						
SPACE						39		--								
								10		40						
SPACE						41			--							
									10	42	60	3				SURGE PROECTION DEVICE
9134	VA - 3PH TOTAL CONNECTED						5095	2049	1990							
3804	VA - CONTINUOUS X 0.25 (*)			=			951	VA								
900	VA - GP RECEPTS X (**)			=			900	VA								
4430	VA - NON-CONTIN X 1.00			=			4430	VA								
(* INCLUDES LIGHTING & LARGEST MOTOR)									16236	FEEDER TOTAL (VA) (***)						
(** 100% OF FIRST 10KW + 50% OF BALANCE)									5	TOTAL RECEPTACLES						
(*** THREE TIMES LARGEST PHASE + 25% OF CONTINUOUS - 50% OF REC VA OVER 10KVA)									45	LARGEST PHASE CURRENT						3/8/2023 10:37
COMMENT:																

VOLTS 120/208V | PANEL **(E) PNL70273** | MAIN 225A MCB
PHASE 3PH, 4 WIRE | LOCATION MCC 70293 | BUS 225A
A.I.C. | FED FROM 15KVA TRANFORMER IN 5L | MOUNTING SURFACE

LOAD							VA LOAD									LOAD
DESCRIPTION	LTG	REC	MTR	AMP	P	NO.	A	B	C	NO.	AMP	P	MTR	REC	LTG	DESCRIPTION
LSL8011				20	1	1	100									
							600			2	20	1				PNL75131
PLC70299				20	1	3		500								
								0		4	20	1				SPARE
LTG-CHEM DISINFECTION	1			20	1	5			500							
									600	6	20	1				PNL75140
REC-CHEM DISINFECTION		3		20	1	7	540									
							1500			8	20	1				TC60342 HEAT TRACING
TC60332 TANK HEATER				20	1	9		1500								
								696		10	20	1				EF70245
EF70246				20	1	11			75							
									696	12	20	1				SF70243
PNL60323				20	1	13	600									
							300			14	20	1				LCP70272
DECHLOR AREA LIGHTING	1			20	1	15		295								
								0		16	20	1				~~PNL70243~~ SPARE
DECHLOR SAMPLE PUMP			1	20	1	17			1200							
									0	18	20	1				~~CV70263~~ SPARE
DECHLOR FLOW METER				20	1	19	50									
							0			20	20	1				SPARE (DECHLOR)
SPARE				20	1	21		0								
								200		22	20	1				MME60216 (AIT6006)
SPARE (FUTURE CV70264)				20	1	23			0							
									600	24	20	1				SMP60214
SPACE						25	--									
							200			26	20	1				MME60421 (AIT6003)
SPACE						27		--								
								0		28	20	1				SPARE
SPACE						29			--							
									0	30	20	1				SPARE
SPACE						31	--									
							--			32						SPACE
SPACE						33		--								
								--		34						SPACE
SPACE						35			--							
									--	36						SPACE
SPACE						37	--									
							10			38						
SPACE						39		--								
								10		40						
SPACE						41			--							
									10	42	60	3				SURGE PROTECTION DEVICE
10782	VA - 3PH TOTAL CONNECTED						3900	3201	3681							
1995	VA - CONTINUOUS X 0.25 (*)			=			490	VA								
540	VA - GP RECEPTS X (**)			=			540	VA								
8247	VA - NON-CONTIN X 1.00			=			8247	VA								
(* INCLUDES LIGHTING & LARGEST MOTOR)									12199	FEEDER TOTAL (VA) (***)						
(** 100% OF FIRST 10KW + 50% OF BALANCE)									3	TOTAL RECEPTACLES						
(*** THREE TIMES LARGEST PHASE + 25% OF CONTINUOUS - 50% OF REC VA OVER 10KVA)									34	LARGEST PHASE CURRENT						3/8/2023 10:37
COMMENT:																

REGISTERED PROFESSIONAL ENGINEER ZANE E. WILSTERMAN No. E22550 Exp. 12-31-24 ELECTRICAL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

THIS LINE IS 1 INCH
AT FULL SCALE
IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

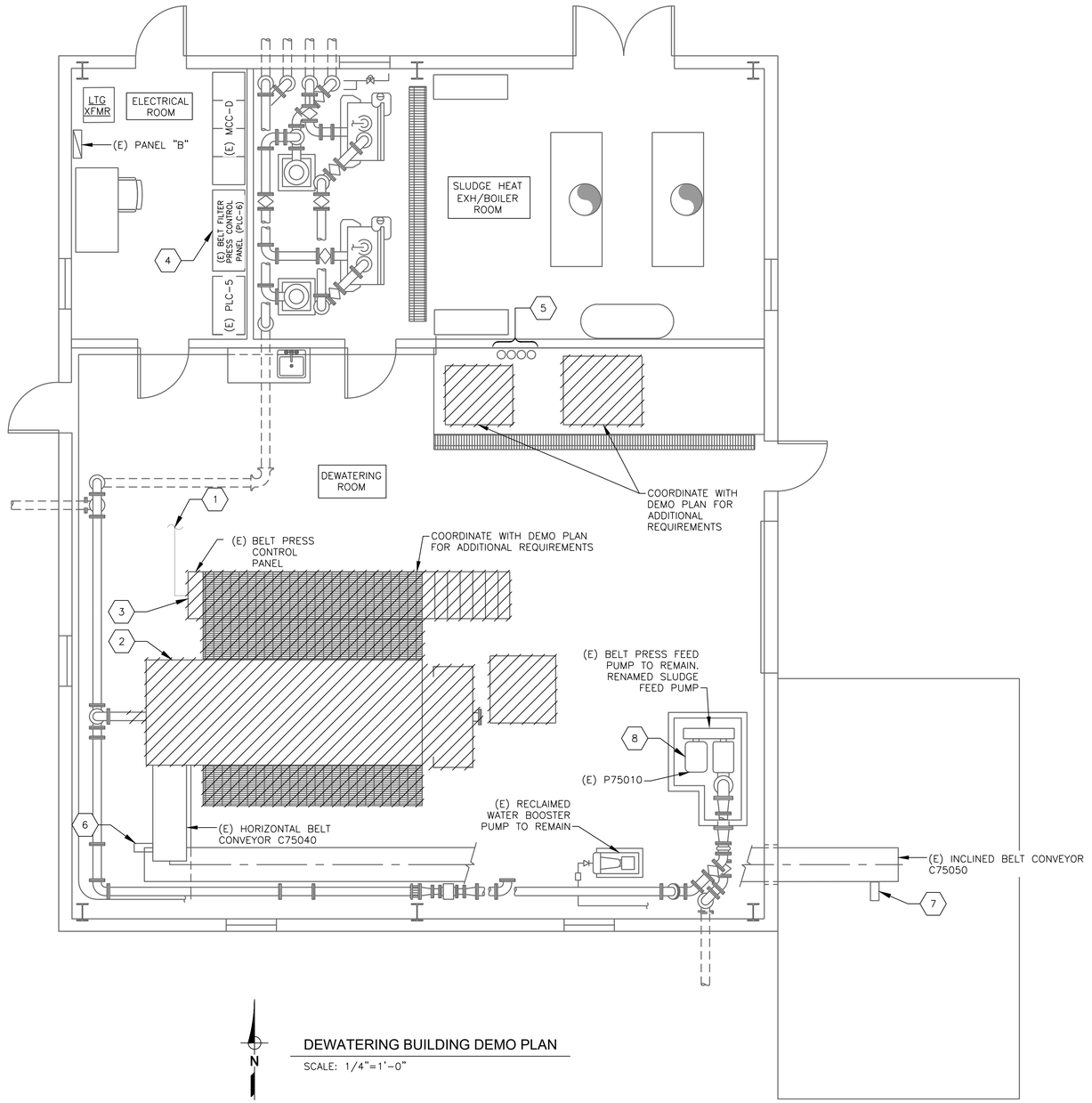
WEST YOST Water. Engineered.

Ukiah Utilities A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
PANEL SCHEDULES

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-E-119
SHEET NUMBER 76 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-70-E-119.dwg 7-17-23 09:43:46 AM sbarber



DEWATERING BUILDING DEMO PLAN

SCALE: 1/4"=1'-0"

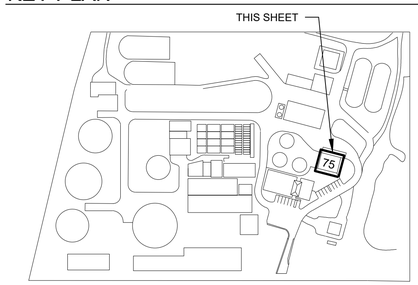
GENERAL NOTES

1. REFER TO DEMOLITION SHEETS 75-D-001 THROUGH 75-D-003 FOR ADDITIONAL REQUIREMENTS.
2. REFER TO ONE LINE DEMOLITION SHEET 75-E-110 FOR ADDITIONAL REQUIREMENTS.
3. FOLLOW ALL LOCKOUT/TAGOUT AND ARC FLASH SAFETY PROCEDURES.
4. ALL SITE CONDITIONS INCLUDING, BUT NOT LIMITED TO, EQUIPMENT, FIELD WIRING, CONDUIT AND STRUCTURES SHALL BE FIELD VERIFIED PRIOR TO WORK COMMENCING.
5. ALL AREAS AFFECTED BY DEMOLITION WORK SHALL BE PATCHED AND REPAIRED TO MATCH EXISTING CONDITIONS.
6. CONTRACTOR SHALL RETURN ALL DEMOLISHED ITEMS TO OWNER IN WORKING CONDITIONS.
7. COORDINATE WITH CITY STAFF OR THEIR REPRESENTATIVE FOR DEMOLITION OF EXISTING EQUIPMENT.
8. ALL SITE CONDITIONS INCLUDING, BUT NOT LIMITED TO, EQUIPMENT, FIELD WIRING, CONDUIT, AND STRUCTURES SHALL BE FIELD VERIFIED PRIOR TO COMMENCING WORK.

KEY NOTES

1. DISCONNECT AND REMOVE CONDUCTORS BACK TO SOURCE. BREAKOUT CHICO FROM SEAL-OFFS. DISCONNECT AND REMOVE CONDUCTORS BACK TO (E) BELT PRESS MAIN CONTROL PANEL. REMOVE SEAL-OFFS AND EXPOSED CONDUITS TO THE BELT PRESS EQUIPMENT AND LOCAL CONTROL PANEL. INSTALL COUPLING AND THREADED PLUG ON EXPOSED CONDUITS PENETRATING FLOOR.
2. EQUIPMENT TO BE REMOVED WITH BELT PRESS. REFER TO OTHER DEMOLITION NOTES ON DEMO SHEETS.
3. DISCONNECT AND SALVAGE LOCAL CONTROL PANEL.
4. DISCONNECT AND REMOVE ALL COMPONENTS FROM REAR MOUNTING PANEL. DISCONNECT AND REMOVE ALL DOOR MOUNTED DEVICES. INSTALL HOLE PLUGS SUITABLE TO MAINTAIN THE ENCLOSURE RATING.
5. BREAKOUT CHICO FROM SEAL-OFFS. DISCONNECT AND REMOVE CONDUCTORS (POWER AND SIGNALS) BACK TO SOURCE. DISCONNECT SEAL-OFF AND EXPOSED CONDUIT TO POLYMER SYSTEM CONTROL PANEL. INSTALL COUPLING AND THREADED PLUG ON EXPOSED CONDUIT PENETRATING FLOOR.
6. (E) HORIZONTAL BELT CONVEYOR MOTOR (M75040). BREAKOUT AND CHICO FROM SEAL-OFF. DISCONNECT AND REMOVE CONDUCTORS BACK TO MCC-D. REMOVE SEAL-OFF AND EXPOSED CONDUIT TO THE MOTOR. INSTALL COUPLING AND THREADED PLUG ON EXPOSED CONDUIT PENETRATING FLOOR.
7. (E) INCLINED BELT CONVEYOR MOTOR (M75050). BREAKOUT AND CHICO FROM SEAL-OFF. DISCONNECT AND REMOVE CONDUCTORS BACK TO MCC-D. REMOVE SEAL-OFF AND EXPOSED CONDUIT TO THE MOTOR. INSTALL COUPLING AND THREADED PLUG ON EXPOSED CONDUIT PENETRATING FLOOR.
8. (E) SLUDGE FEED PUMP (P75010). DISCONNECT AND REMOVE CONDUCTORS BACK TO MCC-D. REMOVE EXPOSED CONDUIT TO THE MOTOR. INSTALL COUPLING AND THREADED PLUG ON EXPOSED CONDUIT PENETRATING FLOOR.

KEY PLAN



REGISTERED PROFESSIONAL ENGINEER ZANE E. WILSTERMAN No. E22550 Exp. 12-31-24 ELECTRICAL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

THIS LINE IS 1 INCH AT FULL SCALE IF NOT SCALE ACCORDINGLY

SCALE : AS NOTED
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST Water. Engineered.

Ukiah Utilities — A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DEWATERING BUILDING DEMO PLAN

JOB NUMBER 592-50-22-14
DRAWING NUMBER 75-E-100
SHEET NUMBER 77 OF 89
REVISION

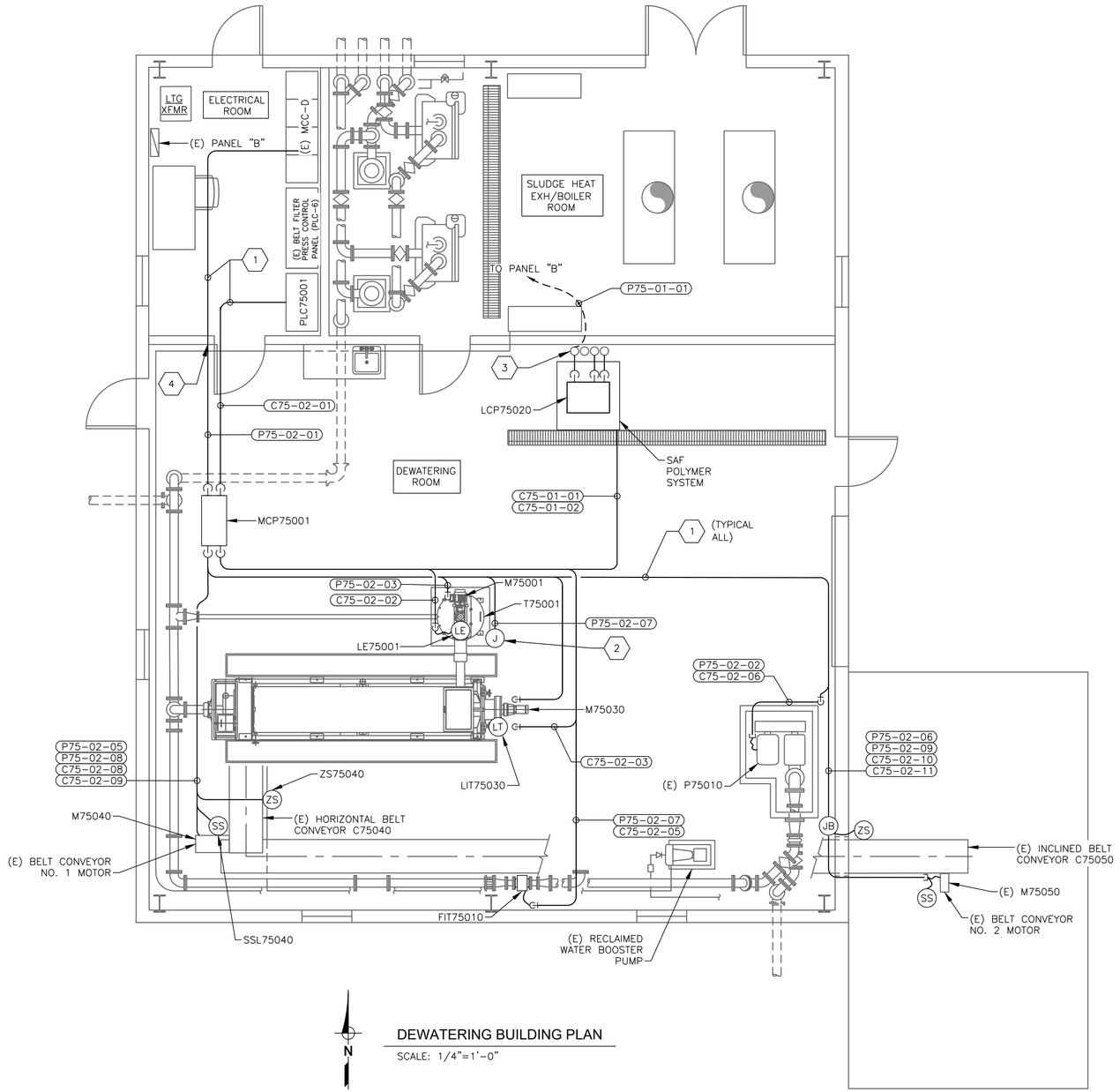
W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-75-E-100.dwg 7-17-23 09:44:32 AM sbarber

GENERAL NOTES

1. REFER TO DRAWING 00-E-001 FOR ELECTRICAL SYMBOLS, LEGENDS AND ABBREVIATIONS.
2. REFER TO DRAWING 00-E-002 FOR GENERAL PROJECT ELECTRICAL NOTES AND DEMO NOTES.
3. REFER TO DRAWING E-00-003/004 FOR ELECTRICAL INSTALLATION DETAILS.
4. REFER TO DRAWING 00-E-006 FOR CONDUIT AND CABLE REQUIREMENTS.
5. FOLLOW ALL LOCKOUT/TAGOUT AND ARC FLASH SAFETY PROCEDURES.
6. OBSERVE AND FOLLOW CLASS1 DIV 2 GROUP D RULES AND REGULATIONS FOR CLASSIFIED AREAS.

KEY NOTES

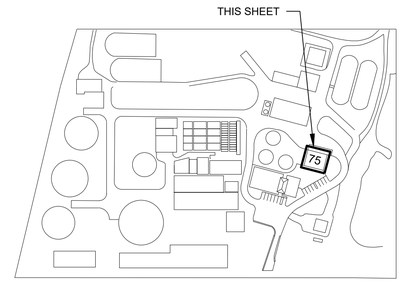
1. INSTALL CONDUIT(S) ALONG CEILING
2. EXTEND 2-#14, #14 GND, 1/2"LFMC FROM JUNCTION BOX TO EACH SOLENOID (V75031, V75032, V75033).
3. UTILIZE EXISTING CONDUIT UNDERGROUND TO PANEL "B". INSTALL 2#10, 1#10 GND IN EXISTING CONDUIT. EXTEND TO POLYMER SYSTEM CONTROL PANEL (LCP75020).
4. CORE DRILL EXISTING BLOCK WALL FOR EACH CONDUIT. INSTALL GROUT OR APPROVED FIRESTOPPING METHOD.



DEWATERING BUILDING PLAN

SCALE: 1/4"=1'-0"

KEY PLAN



REGISTERED PROFESSIONAL ENGINEER
ZANE E. WILSTERMAN
No. E22550
Exp. 12-31-24
ELECTRICAL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

THIS LINE IS 1 INCH
AT FULL SCALE
IF NOT SCALE ACCORDINGLY

SCALE : AS NOTED
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

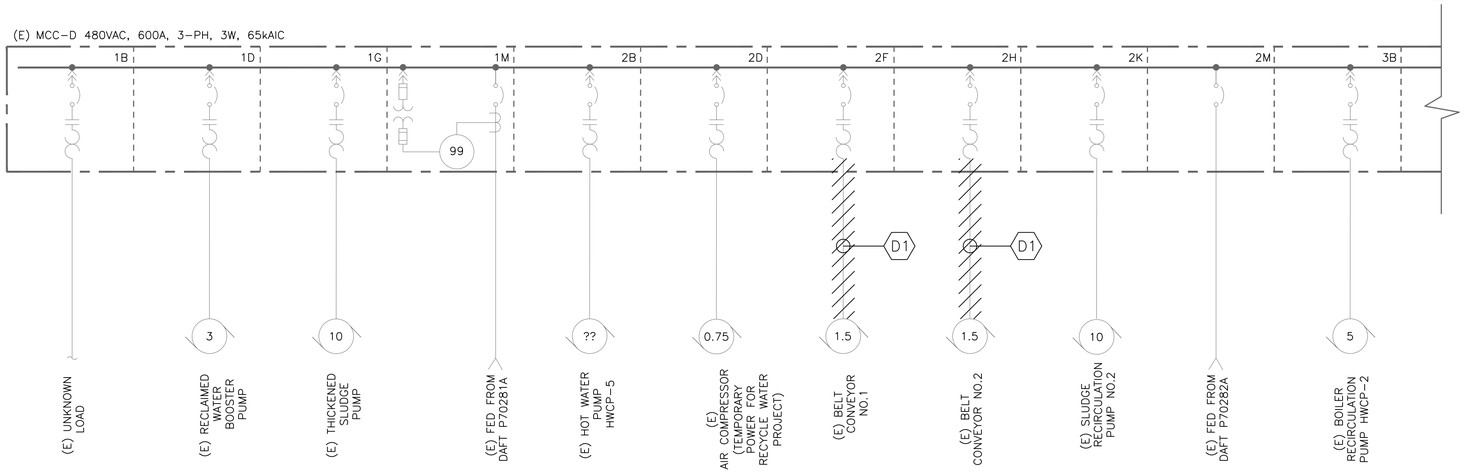
WEST YOST
Water. Engineered.

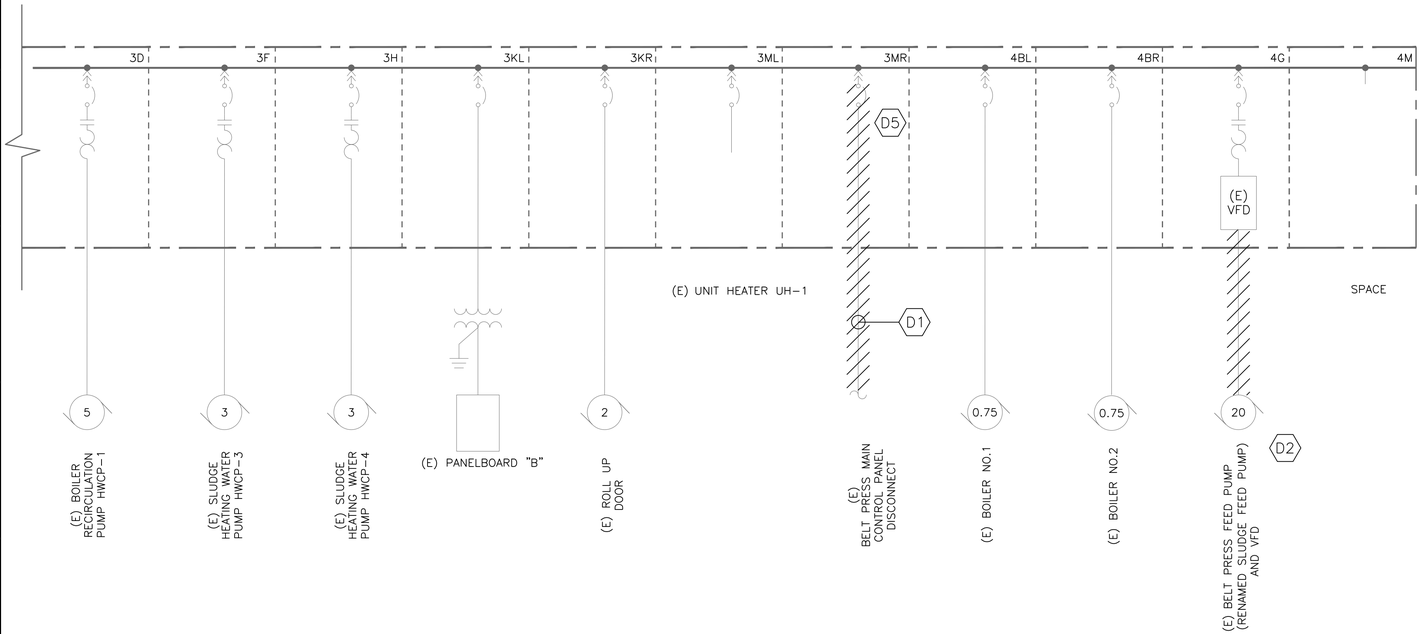
Ukiah Utilities
A Department of the City of Ukiah

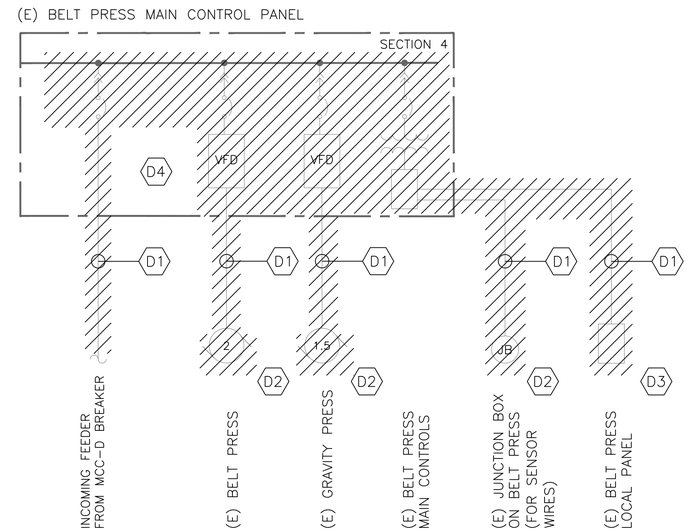
CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DEWATERING BUILDING POWER PLAN

JOB NUMBER 592-50-22-14
DRAWING NUMBER 75-E-101
SHEET NUMBER 78 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-75-E-101.dwg 7-17-23 09:45:06 AM sbarber







GENERAL NOTES

1. FOLLOW ALL LOCKOUT/TAGOUT AND ARC FLASH SAFETY PROCEDURES.

KEY NOTES-DEMO

- D1 DISCONNECT AND REMOVE CONDUCTORS BACK TO SOURCE.
- D2 EQUIPMENT TO BE REMOVED WITH BELT PRESS. REFER TO OTHER DEMOLITION NOTES ON DEMO SHEETS.
- D3 DISCONNECT AND SALVAGE LOCAL CONTROL PANEL.
- D4 DISCONNECT AND REMOVE ALL COMPONENTS FROM REAR MOUNTING PANEL. DISCONNECT AND REMOVE ALL DOOR MOUNTED DEVICES. INSTALL HOLE PLUGS SUITABLE TO MAINTAIN THE ENCLOSURE RATING. SALVAGE PLC RACK AND MODULES TO THE OWNER.
- D5 DISCONNECT AND SALVAGE EXISTING 50A/3P BREAKER.

REGISTERED PROFESSIONAL ENGINEER ZANE E. WILSTERMAN No. E22550 Exp. 12-31-24 ELECTRICAL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

THIS LINE IS 1 INCH AT FULL SCALE IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

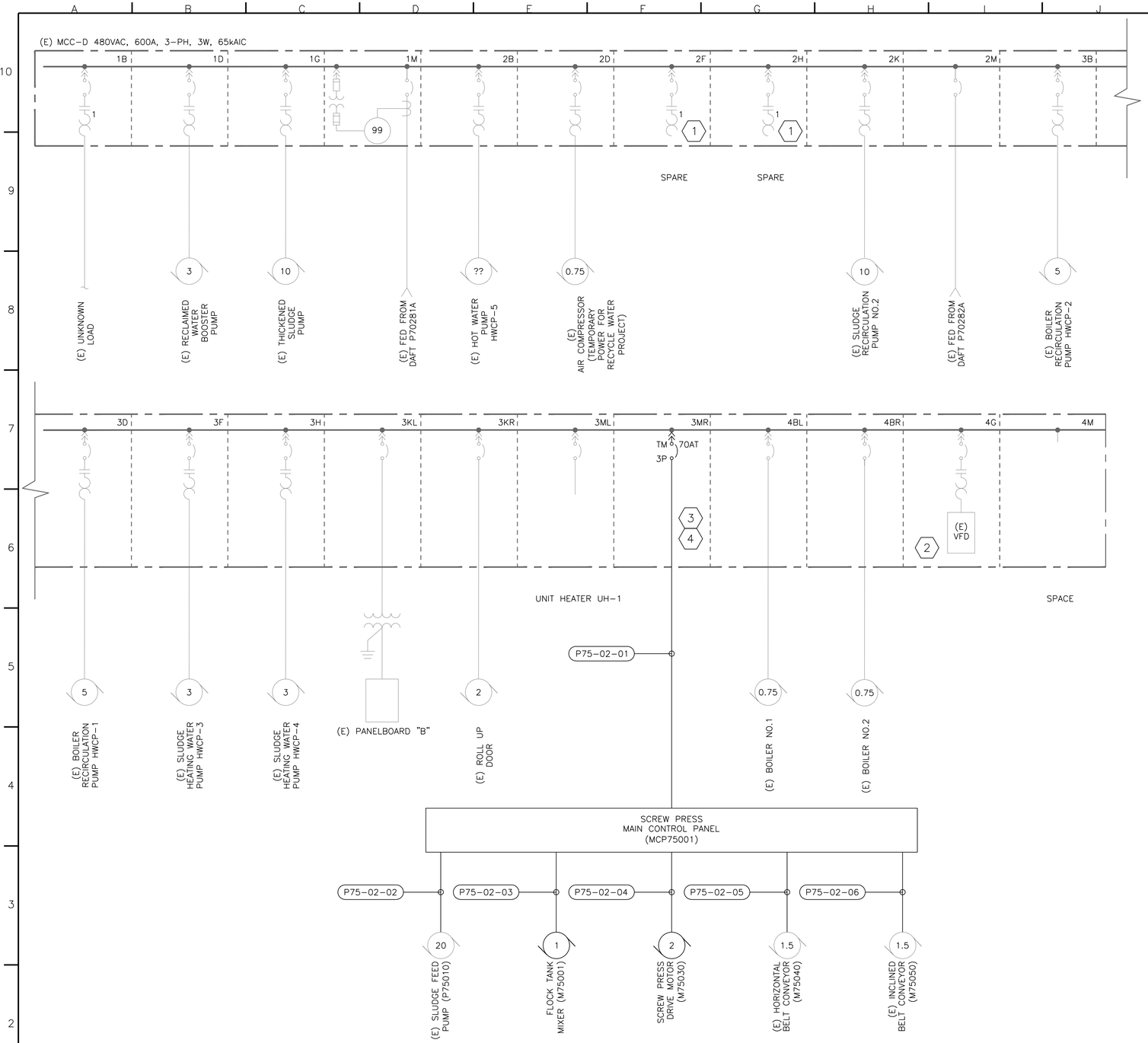
WEST YOST Water. Engineered.

Ukiah Utilities A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MCC-D ONE LINE DEMO

JOB NUMBER 592-50-22-14
DRAWING NUMBER 75-E-102
SHEET NUMBER 79 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-75-E-102.dwg 7-17-23 09:45:44 AM sbarber



GENERAL NOTES

1. REFER TO DRAWING 00-E-006 FOR CONDUIT AND CABLE REQUIREMENTS.
2. FOLLOW ALL LOCKOUT/TAGOUT AND ARC FLASH SAFETY PROCEDURES.

KEY NOTES

1. INSTALL BLACK 1" X 2" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
   LINE 1: "SPARE NEMA"
   LINE 2: "SIZE 1 STARTER"
2. INSTALL BLACK 1" X 2" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
   LINE 1: "SPARE 20HP"
   LINE 2: "VFD"
3. INSTALL BLACK 1" X 2" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
   LINE 1: "SCREW PRESS"
   LINE 2: "MCP DISCONNECT"
4. INSTALL 70A/30P BREAKER TO MATCH EXISTING MCC MFR AND SCCR.

REGISTERED PROFESSIONAL ENGINEER ZANE E. WILSTERMAN No. E22550 Exp. 12-31-24 ELECTRICAL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

THIS LINE IS 1 INCH
AT FULL SCALE
IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

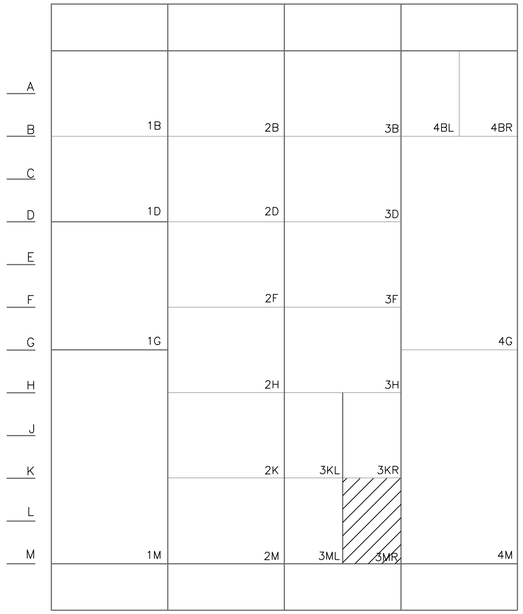
WEST YOST Water. Engineered.

Ukiah Utilities — A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MCC-D ONE LINE DIAGRAM

JOB NUMBER 592-50-22-14
DRAWING NUMBER 75-E-110
SHEET NUMBER 80 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-75-E-110.dwg 7-17-23 09:46:26 AM sbarber



(E) MCC D - DEMOLITION VIEW

MCC SECTION TABLE

TAG#	INSCRIPTION	NOTES
1B	<UNKNOWN LOAD>	
1D	RECLAIMED WATER BOOSTER PUMP STARTER	
1G	THICKENED SLUDGE PUMP STARTER	
1M	MAIN BREAKER FED FROM DAFT P70281A (INCLUDES POWER MONITOR)	
2B	HWCP-5 STARTER	
2D	AIR COMPRESSOR STARTER	
2F	BELT CONVEYOR NO.1 STARTER	D1
2H	BELT CONVEYOR NO.2 STARTER	D1
2K	SLUDGE RECIRC PUMP NO.2 STARTER	
2M	MAIN BREAKER FED FROM DAFT P70282A	
3B	HWCP-2 STARTER	
3D	HWCP-1 STARTER	
3F	HWCP-3 STARTER	
3H	HWCP-4 STARTER	
3KL	PANEL "B" BREAKER	
3KR	ROLL UP DOOR BREAKER	
3ML	UNIT HEATER UH-1 BREAKER	
3MR	BELT PRESS MCP BREAKER	D1 D2
4BL	BOILER NO.1 BREAKER	
4BR	BOILER NO.2 BREAKER	
4G	BELT PRESS FEED PUMP VFD	D1
4M	SPACE	

GENERAL NOTES

1. FOLLOW ALL LOCKOUT/TAGOUT AND ARC FLASH SAFETY PROCEDURES.

KEY NOTES-DEMO

D1 REMOVE EXISTING BUCKET NAMEPLATE.

D2 DISCONNECT AND SALVAGE EXISTING 50A/3P BREAKER.

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-75-E-111.dwg 7-17-23 09:47:00 AM sbarber

REGISTERED PROFESSIONAL ENGINEER ZANE E. WILSTERMAN No. E22550 Exp. 12-31-24 ELECTRICAL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

THIS LINE IS 1 INCH AT FULL SCALE IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

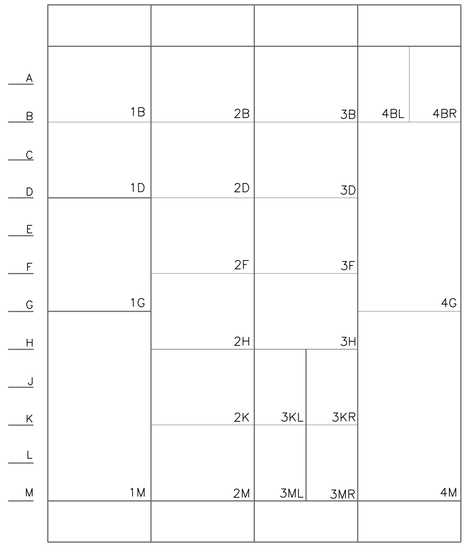
NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST Water. Engineered.

Ukiah Utilities A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MCC-D ELEVATION-DEMO

JOB NUMBER 592-50-22-14
DRAWING NUMBER 75-E-111
SHEET NUMBER 81 OF 89
REVISION



(E) MCC D - ELEVATION VIEW

MCC SECTION TABLE

TAG#	INSCRIPTION	NOTES
1B	<UNKNOWN LOAD>	
1D	RECLAIMED WATER BOOSTER PUMP	
1G	THICKENED SLUDGE PUMP STARTER	(1)
1M	(A) PHASE MAIN BREAKER FED FROM DAFT P70281A (INCLUDES POWER MONITOR)	
2B	HOT WATER PUMP HWCP-5	
2D	AIR COMPRESSOR (TEMPORARY POWER FOR RECYCLE WATER PROJECT)	
2F	SPARE NEMA SIZE 1 STARTER	(1)
2H	SPARE NEMA SIZE 1 STARTER	(1)
2K	SLUDGE RECIRCULATION PUMP NO.2	
2M	(B) PHASE MAIN BREAKER FED FROM DAFT P70282A	
3B	BOILER RECIRCULATION PUMP HWCP-2	
3D	BOILER RECIRCULATION PUMP HWCP-1	
3F	SLUDGE HEATING WATER PUMP HWCP-3	
3H	SLUDGE HEATING WATER PUMP HWCP-4	
3KL	PANELBOARD "B" DISCONNECT	
3KR	ROLL UP DOOR	
3ML	UNIT HEATER UH-1	
3MR	SCREW PRESS MCP DISCONNECT	(3) (4)
4BL	BOILER NO.1	
4BR	BOILER NO.2	
4G	SPARE VFD	(2)
4M	SPACE	

GENERAL NOTES

1. FOLLOW ALL LOCKOUT/TAGOUT AND ARC FLASH SAFETY PROCEDURES.

KEY NOTES

(1) INSTALL BLACK 1" X 2" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
LINE 1: "SPARE NEMA"
LINE 2: "SIZE 1 STARTER"

(2) INSTALL BLACK 1" X 2" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
LINE 1: "SPARE 20HP"
LINE 2: "VFD"

(3) INSTALL BLACK 1" X 2" NAMEPLATE WITH WHITE 1/4" TEXT (ARIAL, CENTERED)
LINE 1: "SCREW PRESS"
LINE 2: "MCP DISCONNECT"

LOAD SUMMARY MCC-D

FAC/AREA (ZONE/SITE):
EQUIPMENT LOCATION: ELECTRICAL EQUIPMENT ROOM TAG NAME:
FED FROM: DAFT P70281A AND DAFT P70282A
MANUFACTURER: SQUARE D MODEL 6

VOLTS/PHASE/WIRE: MAIN
BUS RATING: MAIN BREAKER
(AMPS): AIC RATING (AMPS):
MAIN LUG ONLY:

SECTION NO.	EQUIPMENT NAME	KVA	HP	FLA	BREAKER TRIP RATING
1D	RECLAIMED WATER BOOSTER PUMP		3	4.8	
1G	THICKENED SLUDGE PUMP		10	14.0	
1M	POWER MONITOR	0.05		0.1	
2B	HOT WATER PUMP HWCP-5				
2D	AIR COMPRESSOR		0.75	1.6	
2F	BELT CONVEYOR NO.1		1.5	3	
2K	BELT CONVEYOR NO.2		1.5	3	
2M	SLUDGE RECIRCULATION PUMP NO.2		10	14	
3B	BOILER RECIRCULATION PUMP HWCP-2		5	7.6	
3D	BOILER RECIRCULATION PUMP HWCP-1		5	7.6	
3F	SLUDGE HEATING WATER PUMP HWCP-3		3	4.8	
3H	SLUDGE HEATING WATER PUMP HWCP-4		3	4.8	
3KL	PANELBOARD "B" DISCONNECT	9.9		31.25	
3KR	ROLL UP DOOR		2	3.4	
3ML	UNIT HEATER UH-1	3			
3MR	SCREW PRESS MCP	32		38.5	70A
4BL	BOILER NO.1		0.75	1.6	
4BR	BOILER NO.2		0.75	1.6	
SUBTOTAL:				141.7	
PLUS 25% OF LARGEST MOTOR:				6.8	
TOTAL AMPS				148.5	

REGISTERED PROFESSIONAL ENGINEER
ZANE E. WILSTERMAN
No. E22550
Exp. 12-31-24
ELECTRICAL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

THIS LINE IS 1 INCH
AT FULL SCALE
IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST
Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
MCC-D ELEVATION

JOB NUMBER 592-50-22-14
DRAWING NUMBER 75-E-112
SHEET NUMBER 82 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-75-E-112.dwg 7-17-23 09:47:32 AM sbarber

VOLTS 120/208V					PANEL	(E) PNL B									MAIN 100A MCB
PHASE 3PH, 4 WIRE					LOCATION	DEWATERING BUILDING									BUS 100A
A.I.C.					FED FROM	MCC-D									MOUNTING SURFACE
LOAD							VA LOAD								LOAD
DESCRIPTION	LTG	REC	MTR	AMP	P	NO.	A	B	C	NO.	AMP	P	MTR	REC	LTG	DESCRIPTION
ELEC/SLUDGE HEAT	1			20	1	1	500									RCPT-ELEC/SLUDGE HEAT
EXCH/BOILER LTS							200			2	20	1				EXCH/BOILER
FILTER PRESS LTS	1			20	1	3		300								
								200		4	20	1				RCPT-FILTER PRESS ROOM
EXTERIOR LIGHTING LTS	1			20	1	5			300							
									500	6	20	1				SUPPLY FAN SF-1
UNIT HEATER UH-2				20	1	7	800									
							500			8	20	1				EXHAUST FAN EF-1
UNIT HEATER UH-3				20	1	9		100								
								500		10	20	1				EXHAUST FAN EF-2
UNIT HEATER UH-4				20	1	11			500							
										12	20	1				EXHAUST FAN EF-3
~~SLUDGE COND. POLYMER~~				20	1	13	0									
~~FEEDER~~ **SPARE**							500			14	20	1				EXHAUST FAN EF-4
FIT-320				20	1	15		600								
										16	20	1				SPARE
~~BELT PRESS CONTROL PNL~~				20	1	17			0							
SPARE									800	18	20	1				WATER HEATER EWH-1
SLUDGE CONTROL PNL				20	1	19	200									
							0			20	20	1				SPARE
SPARE				20	1	21		100								
								100		22	20	1				<UNKNOWN>
LIT-230				20	1	23										
									500	24	20	1				FV305/FV306
SPARE				20	1	25	--									
										26	30	1				SPARE
SPARE				20	1	27		--								
										28						SPACE
STREET LIGHTING				20	1	29			300							
										30						SPACE
SPACE						31	--									
							--			32						SPACE
SPACE						33		--								
								--		34						SPACE
SPACE						35			--							
									--	36						SPACE
SPACE						37	--									
										38						SPACE
SPACE						39		--								
										40						SPACE
POLYMER CP (LCP75020)				**30**	**1**	41			2040							
										42						SPACE
9540	VA - 3PH TOTAL CONNECTED						2700	1900	4940							
1100	VA - CONTINUOUS X 0.25 (*)					=	275	VA								
0	VA - GP RECEPTS X (**)					=	0	VA								
8440	VA - NON-CONTIN X 1.00					=	8440	VA								
(* INCLUDES LIGHTING & LARGEST MOTOR)									15095	FEEDER TOTAL (VA) (***)						
(** 100% OF FIRST 10KW + 50% OF BALANCE)									0	TOTAL RECEPTACLES						
(*** THREE TIMES LARGEST PHASE + 25% OF CONTINUOUS - 50% OF REC VA OVER 10KVA)									42	LARGEST PHASE CURRENT						3/8/2023 10:17
COMMENT:																

1 — ~~SLUDGE COND. POLYMER FEEDER~~ **SPARE**

1 — ~~FIT-320~~ **SPARE**

1 — ~~BELT PRESS CONTROL PNL~~ **SPARE**

2 — **POLYMER CP (LCP75020)**

KEY NOTES

1. REFER TO SHEET 75-E-100 FOR DEMOLITION OF FIELD WIRES. REVISE PANEL PLACARD TO LABEL CIRCUIT AS "SPARE".
2. INSTALL 30A/1P BREAKER IN SQUARE D NQOD PANELBOARD TO MATCH EXISTING BREAKERS AIC RATING AND TYPE.

REGISTERED PROFESSIONAL ENGINEER — ZANE E. WILSTERMAN — No. E22550 Exp. 12-31-24 — ELECTRICAL — STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

THIS LINE IS 1 INCH AT FULL SCALE IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : WGF
DESIGNED BY : ZEW
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST Water. Engineered.

Ukiah Utilities — A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
PANEL SCHEDULES

JOB NUMBER 592-50-22-14
DRAWING NUMBER 75-E-113
SHEET NUMBER 83 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\Electrical\592-50-22-14-75-E-113.dwg 7-17-23 09:50:23 AM sbarber

INSTRUMENT IDENTIFICATION TAG LETTERS

	FIRST LETTER		SUCCEEDING LETTER(S)		
ID	MEASURED or INITIATING VARIABLE	MODIFIER	READOUT or PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER FLAME		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	CONDUCTIVITY (ELECTRICAL)		CONTROL	CONTROLLER	
D	DENSITY	DIFFERENTIAL			
E	VOLTAGE (EMF)		PRIMARY ELEMENT		
F	FLOW	RATIO			
G	GAUGING (DIMENSIONAL)		GLASS		
H	HAND (MANUALLY INITIATED)				HIGH/HI–HI/OPENED
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME or TIME SCHEDULE			CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW/LO–LO/CLOSED
M	MOISTURE or HUMIDITY				MID./ INTERMEDIATE
N	TORQUE		ISOLATOR		
O	USER'S CHOICE		ORIFICE		
P	PRESSURE or PNEUMATIC		POINT		
Q	QUANTITY	INTEGRATE TOTALIZE			
R	RADIOACTIVITY		RECORD or PRINT		
S	SPEED or FREQUENCY			SWITCH	
T	TEMPERATURE			TRANSMITTER	
U	MULTI–VARIABLE		MULTI–FUNCTION	MULTI–FUNCTION	MULTI–FUNCTION
V	VISCOSITY			VALVE DAMP./ LOUVER	
W	WEIGHT or FORCE		WELL		
X	UNCLASSIFIED		UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE or PRESENCE			RELAY or COMPUTE	
Z	POSITION				

INDICATORS

- SHARE DISPLAY, PROCESS CONTROL SYSTEM
- SOFTWARE FUNCTIONALITY
- FIELD OR PANEL DEVICE
- INDICATION LIGHT

LOCATION AND ACCESSIBILITY MODIFIERS FOR FUNCTION SYMBOLS

- FIELD MOUNTED
- PANEL, FACE MOUNTED
- PANEL, INTERIOR MOUNTED

PLC I/O REGISTER, WHERE
1 - TAG IDENTIFICATION (SEE ISA INSTRUMENT ID TABLE)
2 - LOOP NUMBER
3 - FUNCTION (SEE ABBREVIATIONS)
4 - DESCRIPTION
5 - LOCATION

- HUMAN INTERFACE MODULE (HIM) OR KEYPAD
- HORN
- BEACON (LETTER DENOTES COLOR)

PRIMARY ELEMENTS

- LEVEL FLOAT SWITCH
- ULTRASONIC LEVEL TRANSDUCER
- SUBMERSIBLE LEVEL TRANSDUCER
- RADAR LEVEL TRANSDUCER ELEMENT
- MAGNETIC FLOW TUBE
- PARSHALL FLUME
- PROPELLER OR TURBINE METER
- ROTAMETER
- VENTURI

PLC I/O SYMBOLS

- ANALOG INPUT SIGNAL
- ANALOG OUTPUT SIGNAL
- DISCRETE INPUT SIGNAL
- DISCRETE INPUT SIGNAL (HIGH SPEED INPUT – PULSE TOTALIZATION, ETC.)
- DISCRETE OUTPUT SIGNAL

MECHANICAL

- GATE
- KNIFE GATE
- BUTTERFLY
- GLOBE
- BALL
- VEE–BALL
- PLUG
- SEAT PORT ECCENTRIC PLUG
- DIAPHRAGM
- PINCH
- NEEDLE
- SWING CHECK
- BALL CHECK
- SOLENOID
- PRESSURE RELIEF
- REGULATED SIDE PRESSURE CONTROL
- AIR AND/OR VACUUM RELEASE
- MULTI–PORT VALVE, GATE VALVE SHOWN. (FOR OTHER VALVE TYPES, APPROPRIATE VALVE SYMBOL SHOWN) ARROWS INDICATE FLOW PATTERN. SEAL PORTS ARE IMPLIED BY INDICATED FLOW PATTERN.
- MOTORIZED ACTUATOR
- SOLENOID
- MANUAL
- FLANGE
- UNION
- REDUCER
- DRAIN
- EXPANSION JOINT
- AIR RELEASE
- REDUCER CONCENTRIC
- REDUCER ECCENTRIC
- MOTOR

ABBREVIATIONS

P&ID ABBREVIATIONS

A	AMPERE	OC	OPEN/CLOSE
AI	ANALOG INPUT	OCA	OPEN/CLOSE/AUTO
ARV	AIR RELIEF VALVE	OCA	OPEN/CLOSE/AUTO
AO	ANALOG OUTPUT	OCR	OPEN/CLOSE/REMOTE
ATS	AUTOMATIC TRANSFER SWITCH	OIT	OPERATOR INTERFACE TERMINAL
AUTO	AUTOMATIC	OL	OVERLOAD
BPS	BOOSTER PUMP STATION	PLC	PROGRAMMABLE LOGIC CONTROLLER
CV	CONTROL VALVE	PSI	POUNDS PER SQUARE INCH
DI	DISCRETE INPUT	RIO	REMOTE INPUT OUTPUT
DO	DISCRETE OUTPUT, DISSOLVED OXYGEN	RST	RESET
(E)	EXISTING	RTU	REMOTE TERMINAL UNIT
ETM	ELAPSED TIME METER	RVSS	REDUCED VOLTAGE SOFT STARTER
FLT	FAULT	SOV	SOLENOID OPERATED VALVE
FVNR	FULL VOLTAGE NON–REVERSING	SP	SETPOINT
H, HI	HIGH	SPD	SPEED
HMI	HUMAN MACHINE INTERFACE	SPR	SPARE
I/O	INPUT/OUTPUT	SS	START/STOP
IS	INTRINSICALLY SAFE BARRIER	STR	MOTOR STARTER
L, LO	LOW	SW	SEAL WATER
LAN	LOCAL AREA NETWORK	TAH	TEMPERATURE ALARM HIGH
LCP	LOCAL CONTROL PANEL	TEMP	TEMPERATURE
LCS	LOCAL CONTROL STATION	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
LS	LEVEL SWITCH (FLOAT)	UPS	UNINTERRUPTIBLE POWER SUPPLY
M	MOTOR	V	VOLT
mA	MILLIAMP	XMTR	TRANSMITTER
MCC	MOTOR CONTROL CENTER		
MFR(S)	MANUFACTURER(S)		
MOD	MODULATED		

LINE TYPES

- REFERENCES ENTERING SHEET (C | I102) — FROM DRAWING REFERENCE — CONNECTION REFERENCE
- REFERENCES LEAVING SHEET (D | I102) — TO DRAWING REFERENCE — CONNECTION REFERENCE
- PROCESS FLOW LINE CONTINUED OUTSIDE SCOPE OF DRAWING

MECHANICAL / ELECTRICAL

- OR — CONNECTED
- NOT CONNECTED

- INSTRUMENTATION DEVICE
- INSTRUMENTATION ELECTRICAL SIGNAL
- FO — FO — INSTRUMENTATION FIBER OPTIC
- CAT6 — CAT6 — INSTRUMENTATION CAT6
- INSTRUMENTATION PLC PANEL
- INSTRUMENTATION DEVICE EXISTING
- INSTRUMENTATION ELECTRICAL SIGNAL EXISTING
- FO — FO — INSTRUMENTATION FIBER OPTIC EXISTING
- CAT6 — CAT6 — INSTRUMENTATION CAT6 EXISTING
- FUTURE/FUTURE PROCESS
- SOFTWARE SIGNAL
- SOFTWARE FUTURE SIGNAL

- PRIMARY PROCESS
- EXISTING PRIMARY PROCESS
- SECONDARY PROCESS
- EXISTING SECONDARY PROCESS
- TERITIARY PROCESS
- EXISTING TERITIARY PROCESS
- EXISTING MECHANICAL PROCESS

LOGIC

- CONTROL LOGIC GENERALIZED TO REPRESENT PLC AND/OR HARDWIRED RELAY LOGIC. REFERENCE LADDER DIAGRAM OR WRITTEN SPECIFICATIONS FOR DETAIL. WITH DIGITAL AND/OR ANALOG SIGNAL INPUTS AND/OR OUTPUTS.
- CONTROL FUNCTION RESIDENT IN SCADA DEVICES. REFERENCE WRITTEN SPECIFICATIONS FOR COMPLETE DESCRIPTION.
- CONTACTOR

EQUIPMENT

- STRAINER
- CENTRIFUGAL PUMP
- CHEMICAL FEED PUMP
- VERTICAL TURBINE PUMP
- SUBMERSIBLE PUMP
- LOW LIFT PUMP

REGISTERED PROFESSIONAL ENGINEER — ZANE E. WILSTERMAN — No. E22550 Exp. 12-31-24 — ELECTRICAL — STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

THIS LINE IS 1 INCH — AT FULL SCALE IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : SMB
DESIGNED BY : XXX
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST Water. Engineered.

Ukiah Utilities — A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
P&ID
LEGEND AND ABBREVIATIONS

JOB NUMBER 592-50-22-14
DRAWING NUMBER 00-I-001
SHEET NUMBER 84 OF 89
REVISION

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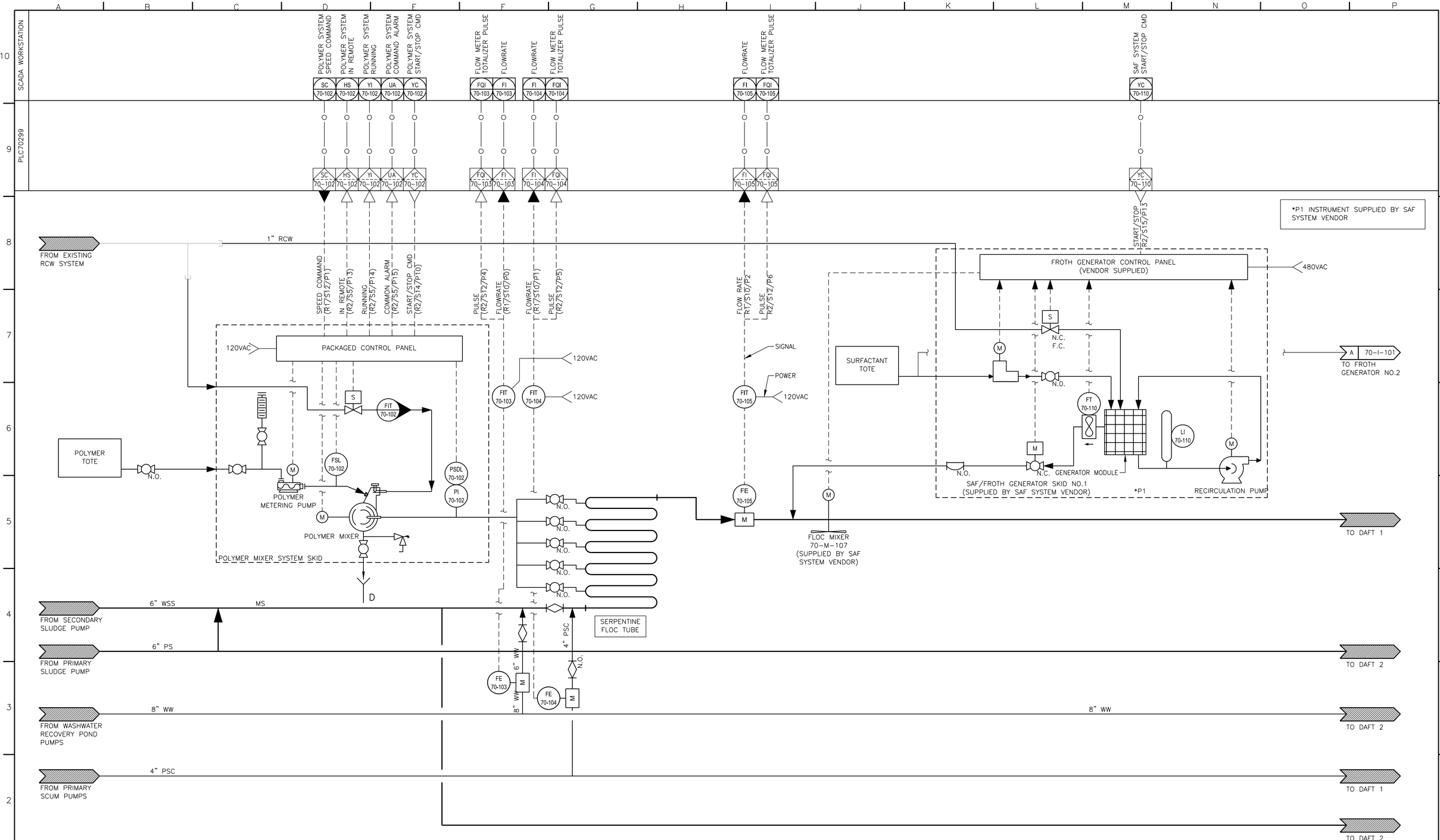

REGISTERED PROFESSIONAL ENGINEER ZANE E. WILSTERMAN No. E22550 Exp. 12-31-24 ELECTRICAL STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI

DATE : JULY 2023

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1		CONFORMED TO ADDENDA	TRB	7/17/23

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Water. Engineered.

Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
SAF No.1
P&ID

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-I-100
SHEET NUMBER 85 OF 89
REVISION

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SCADA WORKSTATION

PLC70299

POLYMER SYSTEM SPEED COMMAND — SC 70-202
POLYMER SYSTEM IN REMOTE — HS 70-202
POLYMER SYSTEM RUNNING — YI 70-202
POLYMER SYSTEM COMMAND ALARM — UA 70-202
POLYMER SYSTEM START/STOP CMD — YC 70-202
FLOW METER TOTALIZER PULSE — FQI 70-203
FLOWRATE — FI 70-203
FLOWRATE — FI 70-204
FLOW METER TOTALIZER PULSE — FQI 70-204
FLOWRATE — FI 70-205
FLOW METER TOTALIZER PULSE — FQI 70-205
SAF SYSTEM START/STOP CMD — YC 70-210

*P1 INSTRUMENT SUPPLIED BY SAF SYSTEM VENDOR

A 70-I-100
FROM SURFACTANT TOTE

1" RCW
FROM EXISTING RCW SYSTEM

START/STOP (R27/S15/P14)

SPEED COMMAND (R17/S12/P2)
IN REMOTE (R27/S6/P4)
RUNNING (R27/S6/P5)
COMMON ALARM (R27/S6/P6)
START/STOP CMD (R27/S14/P11)
PULSE (R27/S12/P7)
FLOWRATE (R17/S10/P3)
FLOWRATE (R17/S10/P4)
PULSE (R27/S12/P8)
FLOWRATE (R17/S10/P5)
PULSE (R27/S12/P9)

120VAC
PACKAGED CONTROL PANEL

FROTH GENERATOR CONTROL PANEL (VENDOR SUPPLIED)
480VAC

S
FIT 70-202
FIT 70-203
FIT 70-204
FIT 70-205
SIGNAL
POWER
120VAC

POLYMER TOTE
N.O.
M
FSL 70-202
PSDL 70-202
PI 70-202
POLYMER METERING PUMP
POLYMER MIXER
POLYMER MIXER SYSTEM SKID
D

N.C. F.C.
N.O.
FT 70-210
LI 70-210
N.C. GENERATOR MODULE
SAF/FROTH GENERATOR SKID NO.2 (SUPPLIED BY SAF SYSTEM VENDOR)
*P1
RECIRCULATION PUMP

FE 70-205
FLOC MIXER 70-M-207 (SUPPLIED BY SAF SYSTEM VENDOR)
TO DAFT 2

SERPENTINE FLOC TUBE
4" PSC
6" WW
8" WW
FE 70-203
FE 70-204

6" WSS
MS
FROM SECONDARY SLUDGE PUMP

6" PS
FROM PRIMARY SLUDGE PUMP
TO DAFT 1

8" WW
FROM WASHWATER RECOVERY POND PUMPS
TO DAFT 1

4" PSC
FROM PRIMARY SCUM PUMPS
TO DAFT 2

TO DAFT 1

REGISTERED PROFESSIONAL ENGINEER — ZANE E. WILSERMAN — No. E22550 Exp. 12-31-24 — ELECTRICAL — STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

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1		CONFORMED TO ADDENDA	TRB	7/17/23

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Ukiah Utilities — A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
SAF No.2
P&ID

JOB NUMBER 592-50-22-14
DRAWING NUMBER 70-I-101
SHEET NUMBER 86 OF 89
REVISION

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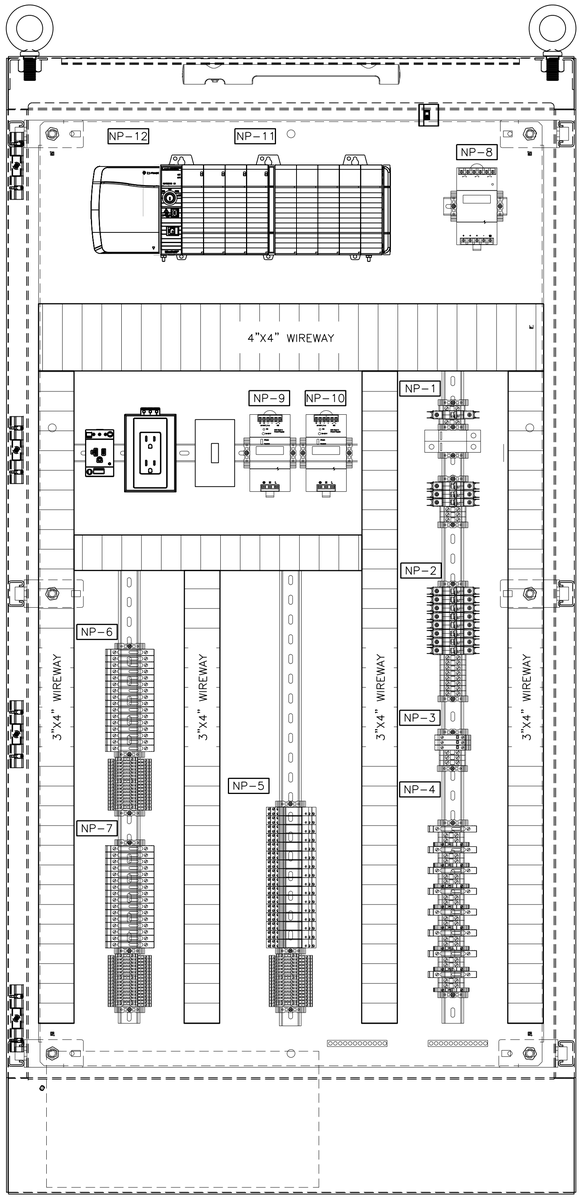
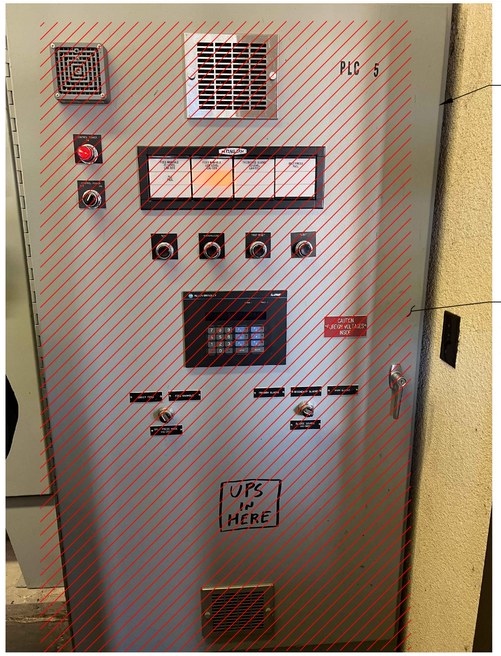


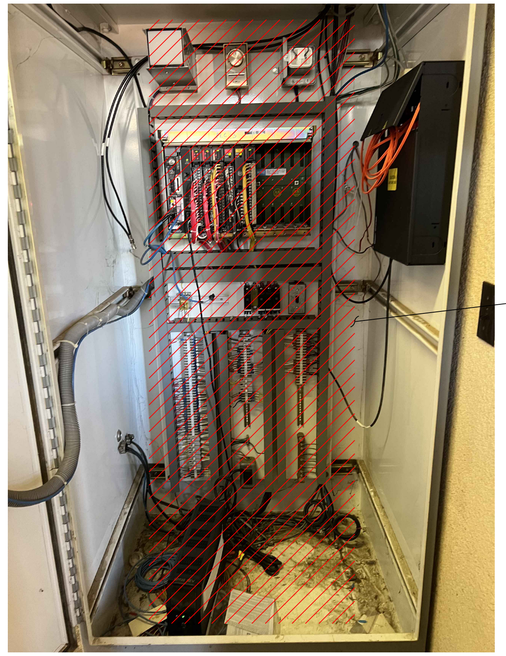
PLC-5 CABINET INTERIOR ELEVATION

NOT TO SCALE



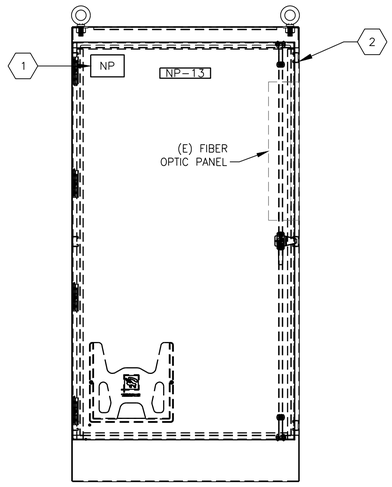
PLC-5 CABINET EXTERIOR ELEVATION - DEMO

NOT TO SCALE



PLC-5 CABINET INTERIOR ELEVATION - DEMO

NOT TO SCALE



PLC-5 CABINET EXTERIOR ELEVATION

NOT TO SCALE

GENERAL NOTES

1. ENCLOSURE AND DOOR MOUNTED DEVICES SHALL MAINTAIN UL TYPE 4 RATING.
2. ASSEMBLY SHALL HAVE 10,000 AMP SCCR.
3. PLC MOUNTING PANEL SHALL MEET UL 508A REQUIREMENTS AND SHALL BEAR UL 508A CONTROL PANEL ASSEMBLY LABEL.

KEY NOTES

1. PROVIDE NAMEPLATE INFORMATION REQUIRED PER NFPA 70, ARTICLE 409.110 (MANUFACTURER NAME, SUPPLY VOLTAGE RATING, NUMBER OF PHASES, FREQUENCY, FULL LOAD CURRENT, FED FROM ###, SCCR).
2. REPLACE OUTER DOOR WITH NEW. ENCLOSURE IS A HOFFMAN CATALOG NUMBER A-723630FS.

DEMOLITION NOTES

- D1 COORDINATE WITH CITY STAFF FOR DEMOLITION OF EXISTING EQUIPMENT.
- D2 DISCONNECT AND REMOVE ELECTRICAL EQUIPMENT. SALVAGE TO OWNER.
- D3 DISCONNECT AND REMOVE POWER AND SIGNAL WIRES AND CABLES FOR ALL DOOR MOUNTED COMPONENTS.

NAMEPLATE SCHEDULE

TAG	FONT	SIZE	LINE 1	LINE 2	LINE 3
NP-1	ARIAL 1/4"H	1" X 3"	INCOMING	120VAC POWER	
NP-2	ARIAL 1/4"H	1" X 3"	120VAC POWER	FED FROM	UPS
NP-3	ARIAL 1/4"H	1" X 3"	24VDC POWER		
NP-4	ARIAL 1/4"H	3/4" X 1"	ANALOG	INPUT	
NP-5	ARIAL 1/4"H	3/4" X 1"	DISCRETE	OUTPUT	
NP-6	ARIAL 1/4"H	3/4" X 1"	DISCRETE	INPUT	
NP-7	ARIAL 1/4"H	3/4" X 1"	DISCRETE	INPUT	
NP-8	ARIAL 1/4"H	3/4" X 1"	REDUNDANCY	MODULE	
NP-9	ARIAL 1/4"H	3/4" X 1"	PS-1		
NP-10	ARIAL 1/4"H	3/4" X 1"	PS-2		
NP-11	ARIAL 1/4"H	3/4" X 1"	PLC		
NP-12	ARIAL 1/4"H	3/4" X 1"	PS-3		
NP-13	ARIAL 1/4"H	3/4" X 1"	DEWATERING AREA	PLC75001	

REGISTERED PROFESSIONAL ENGINEER ZANE E. WILSTERMAN No. E22550 Exp. 12-31-24 ELECTRICAL STATE OF CALIFORNIA

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1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST Water. Engineered.

Ukiah Utilities A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DEWATERING AREA PLC CABINET MODIFICATIONS

JOB NUMBER 592-50-22-14
DRAWING NUMBER 75-I-001
SHEET NUMBER 87 OF 89
REVISION

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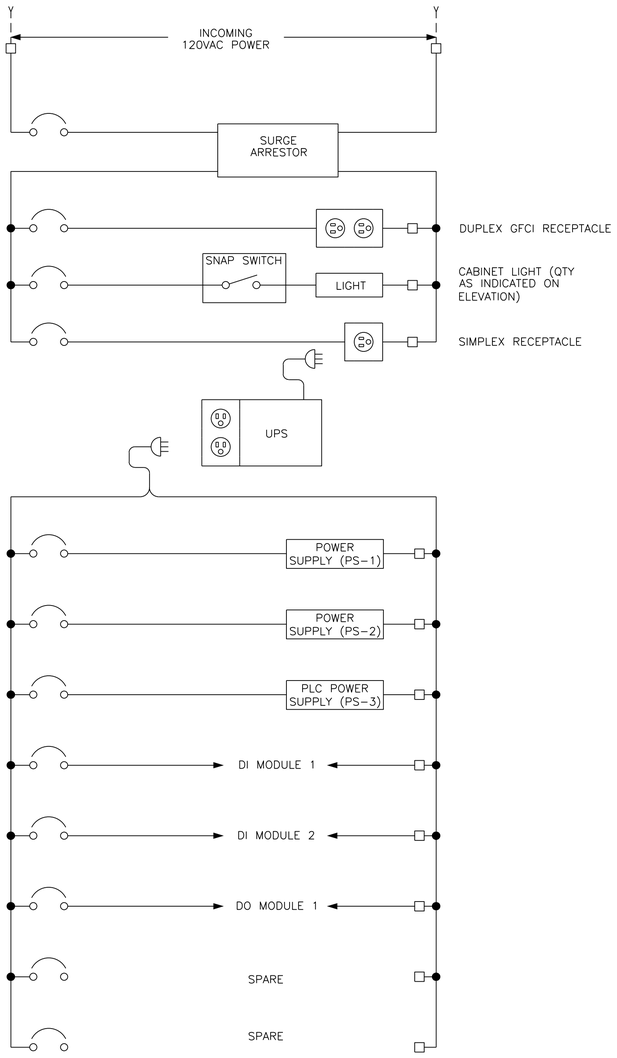

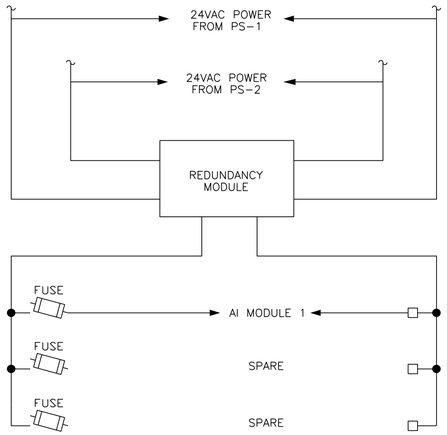

PLC 5 POWER DISTRUIBUTION SCHEMATIC DIAGRAM

REGISTERED PROFESSIONAL ENGINEER
ZANE E. WILSTERMAN
No. E22550
Exp. 12-31-24
ELECTRICAL
STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

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Ukiah Utilities
A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DEWATERING AREA PLC CABINET POWER DISTRIBUTION DIAGRAM

JOB NUMBER 592-50-22-14
DRAWING NUMBER 75-I-002
SHEET NUMBER 88 OF 89
REVISION

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OPERATOR INTERFACE TERMINAL/ SCADA WORKSTATION

SLUDGE FEED PUMP RUNNING — YI 75-010
SLUDGE FEED PUMP ALARM — UA 75-010
SLUDGE FEED PUMP DISCHARGE FLOW RATE — FI 75-010
FLOC TANK MIXER RUNNING — YI 75-001
FLOC TANK MIXER ALARM — UA 75-001
FLOC TANK HIGH-HIGH LEVEL ALARM — LAHH 75-001
POLYMER SYSTEM IN AUTO — HS 75-020
POLYMER SYSTEM RUNNING — YI 75-020
POLYMER SYSTEM TROUBLE — UA 75-020
SCREW PRESS LEVEL — LI 75-030
SCREW PRESS DRIVE RUNNING — YI 75-030
SCREW PRESS DRIVE FAIL — UA 75-030
HORIZONTAL CONVEYOR RUNNING — YI 75-040
HORIZONTAL CONVEYOR FAIL — UA 75-040
HORIZONTAL CONVEYOR E-STOPPED — HS 75-040
INCLINED CONVEYOR RUNNING — YI 75-050
INCLINED CONVEYOR FAIL — UA 75-050
INCLINED CONVEYOR E-STOPPED — HS 75-050

PLC75001 CONTROL PANEL

PLC

SCREW PRESS MAIN CONTROL PANEL (MCP75001)

480VAC

*P2 INSTRUMENT SUPPLIED BY SCREW PRESS SYSTEM VENDOR

STATOR HIGH TEMP
START/STOP CMD
IN AUTO
RUNNING
TROUBLE
SPEED COMMAND (4-20mA)
120VAC FROM PANEL B
FLOW RATE (4-20mA)
HIGH LEVEL
OPEN/CLOSE
LEVEL
OPEN/CLOSE
OPEN/CLOSE
PULL CORD
ZERO SPEED
PULL CORD
ZERO SPEED

VENDOR SUPPLIED LOCAL CONTROL PANEL (LCP75020)

POLYMER TOTE
N.O.
M
FSL
POLYMER METERING PUMP (P75022)
M
POLYMER MIXER (M75023)
S
SOLENOID (V75021)
POLYMER SYSTEM (75-POLY-020)

FROM W2 DISTRIBUTION SYSTEM
FROM SAF 1
FROM SAF 2
FROM W3 DISTRIBUTION SYSTEM
FROM SLUDGE FEED SYSTEM

TSH 75-010
M
(E) SLUDGE FEED PUMP (P75010)

120VAC FROM MCP75001
FIT 75-010
FE 75-010
M

FLOC TANK MIXER (M75001)
M
LE 75-001 *P2
LALL
REF
FLOCCULATION TANK (T75001)

FROM MECHANICAL DW FEED SYSTEM

*P2
LIT 75-030
S
SOLENOID (V75031) *P2
*P2
S
SOLENOID (V75032)
SCREW PRESS DRIVE MOTOR (M75030)
M
SCREW PRESS

S
SOLENOID (V75033) *P2
M
(E) MOTOR (M75040)
(E) HORIZONTAL BELT CONVEYOR (C75040)
*P2
ZS 75-040
*P2
SSL 75-040
120VAC FROM MCP75001

*P2
ZS 75-050
*P2
SSL 75-050
120VAC FROM MCP75001

M
(E) MOTOR (M75050)
(E) INCLINED BELT CONVEYOR (C75050)

CAKE

TO FILTRATE PUMP STATION

REGISTERED PROFESSIONAL ENGINEER — ZANE E. WILSTERMAN — No. E22550 — Exp. 12-31-24 — ELECTRICAL — STATE OF CALIFORNIA

SUBMITTED : TIM BANYAI
DATE : JULY 2023

THIS LINE IS 1 INCH AT FULL SCALE IF NOT SCALE ACCORDINGLY

SCALE : NONE
DRAWN BY : SMB
DESIGNED BY : XXX
PROJ. MGR. : TRB

NO.	ZONE	REVISIONS	BY	DATE
1		CONFORMED TO ADDENDA	TRB	7/17/23

WEST YOST Water. Engineered.

Ukiah Utilities — A Department of the City of Ukiah

CITY OF UKIAH
THICKENING AND DEWATERING IMPROVEMENTS
DEWATERING AREA
P&ID

JOB NUMBER 592-50-22-14
DRAWING NUMBER 75-I-100
SHEET NUMBER 89 OF 89
REVISION

W:\Clients\592 City of Ukiah\50-22-14 Screw Press and SAF Eng. and CM\CAD\Production\SAF Project\592-50-22-14-75-I-100.dwg 7-17-23 09:02:59 AM sbarber

City of Ukiah

MENDOCINO COUNTY, CALIFORNIA

Special Provisions for:

Thickening and Dewatering Improvements

Specification No. 23-02

CITY OF UKIAH
DEPARTMENT OF PUBLIC WORKS
300 Seminary Avenue
Ukiah, California 95482-5400

Bids Open: **Tuesday, May 16, 2023**
2:00 p.m.
Office of City Clerk

July 2023

Conformed to Addenda

WEST YOST
Water. Engineered.

2020 Research Park Drive, Suite 100
Davis, CA 95618
(530) 756-5905
FAX (530) 756-5991

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CITY OF UKIAH

MENDOCINO COUNTY, CALIFORNIA

CITY COUNCIL:

MARI RODIN, MAYOR
JOSEFINA DUENAS – VICE-MAYOR
DOUGLAS CRANE – COUNCIL MEMBER
JUAN OROZCO – COUNCIL MEMBER
SUSAN SHER– COUNCIL MEMBER

SAGE SANGIACOMO – CITY MANAGER
TIM ERIKSEN - DIRECTOR OF PUBLIC WORKS / CITY ENGINEER
MARY HORGER – FINANCIAL SERVICES MANAGER
KRISTINE LAWLER – CITY CLERK
R. ALLEN CARTER - CITY TREASURER

CITY OF UKIAH
DEPARTMENT OF PUBLIC WORKS
July 2023

City of Ukiah
Mendocino County, California

Special Provisions for:

THICKENING AND DEWATERING IMPROVEMENTS
Specification No. 23-02

DESIGN CERTIFICATION

The Technical Specifications contained herein have been prepared by, or under the responsible change of, the following registered person(s):

West Yost Associates
2020 Research Park Drive, Suite 100
Davis, CA 95618

Timothy R. Banyai, P.E. 60715
Expires 12/31/24

West Yost Associates
2020 Research Park Drive, Suite 100
Davis, CA 95618

Zane E. Wilsterman, PE 22550
Expires 12/31/24

TJC and Associates
PO Box 2059
Folsom, CA 95630

Hernando J. Montoya, PE 84801
Expires 03/31/24

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CITY OF UKIAH, MENDOCINO COUNTY, CALIFORNIA

NOTICE TO BIDDERS

FOR

THICKENING AND DEWATERING IMPROVEMENTS SPECIFICATION NO. 23-02

NOTICE IS HEREBY GIVEN that sealed standard proposals for THICKENING AND DEWATERING IMPROVEMENTS will be received at the Office of the City Clerk, Ukiah Civic Center, 300 Seminary Avenue, Ukiah California until 2:00 p.m. on Tuesday, May 16, 2023. Bids shall be addressed to the City Clerk and shall be endorsed THICKENING AND DEWATERING IMPROVEMENTS. Bids are required for the entire work described herein. No fax bids will be accepted. As soon thereafter as possible, the bids will be publicly opened and read in the Council Chambers at 300 Seminary Avenue, Ukiah. The bid opening will also be visible via live streaming at http://www.cityofukiah.com/meetings/.

Plans and Special Provisions may be inspected and/or copies obtained from the City's website at www.cityofukiah.com/purchasing. No bid will be considered unless it is made on the forms furnished by the City and is made in accordance with the details of the Special Provisions. Each bidder must be licensed as required by law. Further information regarding the work or these specifications can be obtained by calling Seth Strader, Administrative Analyst at (707) 467-5719 or by email at sstrader@cityofukiah.com.

The City Council reserves the right to reject any or all bids and to determine which proposal is, in its opinion, the lowest responsive bid by a responsible bidder and which it deems in the best interest of the City to accept. The City Council also reserves the right, but not the obligation, to waive any irregularity or failure to strictly comply with the bidding requirements, that the City determines in the reasonable exercise of its discretion does not provide the bidder with a competitive advantage over other bidders.

No contractor or subcontractor may be listed on a bid proposal for a public works unless registered with the Department of Industrial Relations ("DIR") pursuant to Labor Code section 1725.5 except as allowed. under Labor Code section 1771.1(the prime contractor shall be responsible for posting job site notices as prescribed by regulation. This project is subject to compliance monitoring and enforcement by the DIR.

Pursuant to provisions of Section 1770, including amendments thereof, of the Labor Code of the State of California, the DIR Director has ascertained the general prevailing rate of wages for straight time, overtime, Saturdays, Sundays and Holidays including employer payment for health and welfare, vacation, pension and similar purposes for the City of Ukiah. Copies of his General Prevailing Wage Determination are available on the Internet at web address: http://www.dir.ca.gov/DLSR/PWD/ The prime contractor for the work herein shall possess a current, valid State of California, Class A Contractor's License. Pursuant to California Public Contract Code §22300, this contract includes provisions that allow substitutions of certain types of securities in lieu of the City withholding a portion of the partial payments due the Contractor to insure performance under this contract.

By order of the City Council, City of Ukiah, County of Mendocino, State of California.

Dated:_____ _____

Kristine Lawler, City Clerk, City of Ukiah, California

PUBLISH TWO TIMES:

INSTRUCTIONS TO BIDDERS

THICKENING AND DEWATERING IMPROVEMENTS shall be performed in accordance with the Plans and Special Provisions therefor adopted, to which special reference is hereby made.

Each bidder must supply all the information required by the bid documents and Special Provisions.

Minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color or national origin in consideration for an award of any contract entered into pursuant to this advertisement. Women will be afforded equal opportunity in all areas of employment. However, the employment of women shall not diminish the standards or requirements for the employment of minorities.

All proposals or bids shall be accompanied by a cashier's check or certified check payable to the order of the City of Ukiah amounting to 10 percent of the bid, or by a bond in said amount and signed by the bidder and a corporate surety, payable to said City. Said check shall be forfeited, or said bond shall become payable to said City in case the bidder depositing the same does not, within fifteen (15) days after written notice that the contract has been awarded to him: (a) enter into a contract with the City and (b) furnish certificates of insurance and endorsements, a bond of faithful performance and a payment bond as described in the Special Provisions.

No bidder shall withdraw his or her bid for a period of thirty (30) calendar days after the date set by the City for the opening thereof.

The Contractor and any subcontractors shall each possess a valid City of Ukiah Business License prior to the start of any work.

The Contractor shall furnish a project schedule to the Engineer prior to the start of any work and start work as scheduled.

The work is to be completed within three hundred and thirty-five (335) calendar days. The Contractor will pay to the City the sum of five hundred ($500.00) dollars per day for each and every calendar day's delay beyond the time prescribed.

The staff shall notify a bidder by telephone or email, if it intends to recommend the rejection of the bidder’s bid. Any bid protest must be filed with the City Clerk not more than five calendar days following the bid opening, or 2 calendar days following notice that staff is recommending the rejection of a bid. If any such timely written protest is filed, all bidders shall be provided a copy of the protest within 2 calendar days of its receipt, which may be delivered to the bidders as an email attachment. All such bidders may file with the City Manager a written objection or other response to the protest.

All objections or responses filed not more than 5 days after receipt of the written protest will be presented to the City Council at its next regular meeting occurring not less than 12 calendar days following the bid opening. The City Council will resolve the bid protest at that meeting based on the written protest, any staff recommendation and all timely written objections and responses. In accordance with the Brown Act, any person may address the City Council on this item during the meeting. The City Council action on the protest shall represent a final decision by the City on the protest.

Examination of Site, Drawings, Etc.

Each bidder shall visit the site of the proposed work and fully acquaint himself with local conditions, construction and labor required so that he or she may fully understand the facilities, difficulties and restrictions attending the execution of the work under the Contract. A mandatory pre-bid meeting will be held at 10:00 am on April 4, 2023 at 300 Plant Road, Ukiah, CA 95482. Bidders shall thoroughly examine and be familiar with the Plans and Special Provisions. The failure of any bidder to receive or examine any

form, instrument, addendum, or other document, or to visit the site and acquaint himself with conditions there existing, shall in no way relieve the bidder from any obligation with respect to his or her proposal or to the contract. The drawings for the work show conditions as they are supposed or believed by the Engineer to exist; but, it is neither intended nor shall it be inferred that the conditions as shown thereon constitute a representation by the Engineer, the City or its officers that such conditions are actually existent, nor shall the City, the Engineer or any of their officers or representatives be liable for any loss sustained by the Contractor as a result of a variance between the conditions shown on the drawings and the conditions actually revealed during the progress of the work or otherwise.

The bidder's attention is directed to the possible existence of obstructions and public improvements within the limits of the work or adjacent thereto, which may or may not be shown on the Drawings. Any bid shall take into consideration that conditions may exist underground or otherwise that are not known to the City or easily detected during a site inspection that could impact the time or cost of completing the project. The City expects the bids to anticipate such conditions so that it can know for budgeting and other purposes the total cost to complete the project before accepting a bid and undertaking the legal obligation to construct the project. In awarding the contract the City relies on the contractor's representation that its bid anticipates differing site conditions and the additional time or cost that such conditions may necessitate.

The bidder shall investigate to his or her satisfaction the conditions to be encountered, the character, quality and quantities of work to be performed and materials to be furnished and the requirements of the Plans, Special Provisions, Standard Specifications, Standard Plans, and Contract Documents. The submission of a proposal shall be considered conclusive evidence that the bidder has made such examination and has accepted the project workplace as a safe workplace to perform the work of the Contract.

Bidder Inquiries and Questions

Inquiries and questions must be submitted in writing via email to the following designated contact person:

Seth Strader, Administrative Analyst
Email: sstrader@cityofukiah.com

The City reserves the right to not respond to inquiries or questions submitted within 3 business days of the bid opening.

Location of the Work

All of the work to be performed is within the City of Ukiah. Project is located at 300 Plant Road, Ukiah, California 95482.

GENERAL CONDITIONS

SECTION 1. PROPOSAL REQUIREMENTS AND GENERAL CONDITIONS

1-01. Definitions. Whenever any word or expression defined in this section, or pronoun used in its stead, occurs in these contract documents, it shall have and is mutually understood to have the meaning given:

a. "City of Ukiah" or "City" shall mean the City of Ukiah, Mendocino County, California, acting through its City Council or any other board, body, official or officials to which or to whom the power belonging to the Council shall by virtue of any act or acts, hereafter pass or be held to appertain.

b. "Engineer" shall mean the Engineer duly and officially appointed by the City to supervise and direct the work of construction under this contract, acting personally or through agents or assistants duly authorized by him, such agents or assistants acting within the scope of the particular duties entrusted to them.

c. "Inspector" shall mean the engineering or technical inspector or inspectors duly authorized or appointed by the Engineer, limited to the particular duties entrusted to him or her or them.

d. "Contractor" shall mean the party entering into contract with the City of Ukiah for the performance of work covered by this contract and his or her authorized agents or legal representatives.

e. "Date of signing of contract" or words equivalent thereto, shall mean the date upon which this contract, with the signature of the Contractor affixed, together with the prescribed bonds, shall be or shall have been delivered to the City or its duly authorized representatives.

f. "Day" or "days", unless herein otherwise expressly defined, shall mean a calendar day or days of twenty-four hours each.

g. "The work" shall mean and include all the work specified, indicated, shown or contemplated in the contract to construct the improvement, including all alterations, amendments or extensions thereto made by contract change order or other written orders of the Engineer.

h. "Contract drawings", "drawings", "plans" shall mean and include 1) all drawings or plans which may have been prepared by or on behalf of the City, as a basis for proposals, when duly signed and made a part of this contract by incorporation or reference, 2) all drawings submitted in pursuance of the terms of this contract by the successful bidder with his or her proposal and by the Contractor to the City if and when approved by the Engineer and 3) all drawings submitted by the Engineer to the Contractor during the progress of the work as provided for herein.

i. Where "as shown", "as indicated", "as detailed" or words of similar import are used, it shall be understood that reference to the drawings accompanying these Special Provisions is made unless stated otherwise.

Where "as directed", "as permitted", "approved" or words of similar import are used, it shall be understood that the direction, requirements, permission, approval or acceptance of the Engineer is intended unless stated otherwise.

As used herein, "provide" or "install" shall be understood to mean "provide or install complete in place", that is, "furnish and install". "Shall" is mandatory; "may" is permissive.

1-02. Examination of Plans, Special Provisions and Site of Work. The bidder shall examine carefully the Proposal, Plans, Special Provisions, Contract forms and the site of the work contemplated therefor. It will be assumed that the bidder has investigated to his or her satisfaction the conditions to be encountered and the character, quality and requirements of all Plans, Special Provisions, Standard Specifications, and Standard Plans involved.

1-03. Proposal. Bids shall be made on the blank forms prepared by the City. All bids shall give the prices bid, both in writing and in figures and shall be signed by the bidder or his or her authorized representative, with his or her address. If the bid is made by an individual or partner, his or her name and the post office address of his or her business or partnership, along with his or her signature or the signature of one or more partners must be shown; if made by a corporation, the bid shall show the name of the state under the laws of which the corporation is chartered, the name of the corporation and the title of the person who signs on behalf of the corporation.

Each proposal shall be enclosed in a sealed envelope, endorsed as specified in the notice to bidders. Bidders are warned against making erasures or alterations of any kind and proposals which contain omissions, erasures, conditions, alterations, additions not called for, additional proposals or irregularities of any kind may be rejected.

1-04. Withdrawal of Bids. Any bid may be withdrawn at any time prior to the hour fixed in the notice to bidders for the openings of bids, provided that a request in writing, executed by the bidder or his or her duly authorized representative, for the withdrawal of such bid is filed with the City. The withdrawal of a bid will not prejudice the right of a bidder to file a new bid.

1-05. Public Opening of Bids. Bids will be opened and read publicly at the time and place indicated in the notice to bidders. Bidders or their agents are invited to be present.

1-06. Bid Guaranty. Each bid must be accompanied by a certified check, cashier's check or bidder's bond executed by an admitted surety insurer, payable to the order of the City of Ukiah in an amount not less than 10 percent of the bid as a guarantee that the bidder will enter into a contract, if awarded the work.

1-07. Qualification of Bidders. No contractor or subcontractor may be listed on a bid proposal for a public works project (submitted on or after March 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)]. No contractor or subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. The prime contractor shall be responsible for posting job site notices as prescribed by regulation. This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

Each bidder shall be licensed under the provisions of Chapter 9, Division 3 of the Business and Professions Code and shall be skilled and regularly engaged in the general class or type of work called for under this contract. A statement setting forth this experience and business standing shall be submitted by each bidder on the form provided herewith. It is the intention of the City to award a contract only to a bidder who furnishes satisfactory evidence that he or she has the requisite experience and ability and that he or she has sufficient capital, facilities and equipment to enable him or her to prosecute the work successfully and promptly within the time and in the manner agreed.

In determining the degree of responsibility to be credited to a bidder, the City may weigh evidence that the bidder or his or her personnel charged with the responsibility in the work, has performed satisfactorily other contracts of like nature and magnitude or comparable difficulty at similar rates of progress.

1-08. Disqualification of Bidders. More than one bid from an individual business, partnership, corporation or association, under the same or different names, will not be considered. Reasonable grounds for believing that any bidder is financially interested in more than one bid for the work will cause the rejection

of all bids in which he or she is so interested. If there is reason to believe that collusion exists among the bidders, none of the participants in such collusion will be considered. Bids in which the prices obviously are unbalanced may be rejected.

1-09. Identification of Subcontractors. All bids shall comply with the Subletting and Subcontracting Fair Practices Act (Public Contract Code Section 4100 and following) and shall set forth:

(a) The name and the location of the place of business of each subcontractor who will perform work or labor, or render service to the prime contractor in or about the construction of the work, or to a subcontractor licensed by the State of California who, under subcontract to the prime contractor, specially fabricates and installs a portion of the work according to detailed drawings contained in the plans and Special Provisions, in an amount in excess of one-half of 1 percent of the prime contractor's total bid.

(b) The portion of the work which will be done by each such subcontractor. The prime contractor shall list only one subcontractor for each such portion defined by the prime contractor in his or her bid.

1-10. General Provisions of the Standard Specifications. All provisions of the General Provisions, Sections 1 through 11, of the Standard Specifications, shall be applicable to the contract except as modified by these Special Provisions. The Standard Specifications are set forth in Section 12-06 of these Special Provisions.

1-11. Addenda. If it becomes necessary to revise any part of these plans and specifications after they have been released, the City will issue an addendum containing the revision. All addenda will be posted on the City's website at www.cityofukiah.com/purchasing with the rest of the bid documents. Anyone who intends to submit a bid in response to this Request for Bid must check the website frequently for any posted addenda. Anyone submitting a bid will be deemed to have seen and agreed to be bound by the posted addenda.

SECTION 2. AWARD AND EXECUTION OF CONTRACT

2-01. Award of Contract. Award of the contract, if it be awarded, will be to the lowest responsible bidder whose bid complies with all the specified requirements. The award, if made, will be made within thirty (30) days after opening of the bids. The City reserves the right to reject any and all bids and to waive any irregularity in the proposal not pertaining to cost.

2-02. Return of Proposal Guaranties. All bid guaranties will be held until the contract has been fully executed, after which they will be returned upon request to the respective bidders whose bids they accompany.

2-03. Execution of Contract. The contract agreement shall be executed in duplicate by the successful bidder and returned, together with the contract bonds, insurance certificates and endorsements, within fifteen (15) days after written notice of the award of the contract. After execution by the City; one copy shall be filed with the City and one copy shall be returned to the Contractor. If the bidder fails or refuses to enter into the contract agreement within the required time, then the bid guaranty accompanying the bid shall be forfeited to the City.

SECTION 3. SCOPE AND INTENT OF CONTRACT

3-01. Effect of Inspection and Payments. Neither the inspection by the Engineer or an inspector, nor any order, measurement or approved modification, nor certificate or payment of money, nor acceptance of any part or whole of the work, nor any extension of time, nor any possession by the City or its agents, shall operate as a waiver of any provision of this contract or of any power reserved therein to the City, or of any

right to damages thereunder; nor shall any breach of this contract be held to be a waiver of any subsequent breach. All remedies shall be construed as cumulative.

3-02. Effect of Extension of Time. The granting of any extension of time on account of delays which, in the judgement of the City, are avoidable delays shall in no way operate as a waiver on the part of the City of its rights under this contract.

3-03. Extra Work. If extra work orders are given in accordance with provisions of this contract, such work shall be considered a part hereof and shall be subject to each and all of its terms and requirements.

3-04. Assignment of Contract. The contract may be assigned or sublet in whole or in part only upon the written consent of the City acting through its authorized agents. Consent will not be given to any proposed assignment which would relieve the original contractor or its surety of their responsibilities under the contract nor will the Engineer consent to any assignment of a part of the work under the contract.

3-05. Subcontractors. The Contractor shall be as fully responsible for the acts and omissions of his or her subcontractors and of persons either directly or indirectly employed by them, as he or she is for the acts and omissions of persons directly employed by him.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the terms of this Contract which are applicable to the work of subcontractors.

Nothing contained in this contract shall be construed to create or shall be relied upon to create any contractual relationship between any subcontractor and the City and no action may be brought by any subcontractor against the City based on this contract.

3-06. Interpretation of Special Provisions and Drawings. The Special Provisions and the Contract Drawings are intended to be explanatory of each other. Any work indicated in the Contract Drawings and not in the Special Provisions, or vice versa, is to be executed as if indicated in both. In case of a discrepancy or conflict between the Technical Specifications and Contract Plans, the Technical Specifications shall govern. All work shown on the Contract Drawings, the dimensions of which are not figured, shall be accurately followed to the scale to which the drawings are made, but figured dimensions are in all cases to be followed, where given, though they differ from scaled measurements. Large scale drawings shall be followed in preference to small scale drawings. Should it appear that the work to be done, or any of the matters relative thereto, are not sufficiently detailed or explained in these contract documents, including the contract drawings, the Contractor shall apply to the Engineer for such further explanations as may be necessary and shall conform thereto as part of this contract, so far as may be consistent with the terms of this contract. In the event of any doubt or questions arising respecting the true meaning of the Special Provisions, reference shall be made to the Engineer and his or her decision thereon shall be final. If the Contractor believes that a clarification or interpretation justifies an increase in the contract price or contract time, the Contractor must comply with the written notice provisions of Sections 9-05 and 10-07 of these Special Provisions. Contractor's attention is directed to Section 12-06 of the Technical Specifications regarding the Standard Specifications and Standard Plans.

3-07. Addenda. If it becomes necessary to revise any part of these plans and specifications after they have been released, the City will issue an addendum containing the revision. All addenda will be posted on the City's website at www.cityofukiah.com/purchasing with the rest of the bid documents. Anyone who intends to submit a bid in response to this Request for Bid must check the website frequently for any posted addenda. Anyone submitting a bid will be deemed to have seen and agreed to be bound by the posted addenda.

3-08. Liability of City Officials. No city official, nor the Engineer, nor any authorized assistant of any of them, shall be personally responsible for any liability arising under this contract.

3-09. Dispute Resolution. Claims of $375,000 or less by the Contractor that arise under this Contract are subject to the mandatory dispute resolutions provisions in Public Contract Code Sections 20104-20104.6.

SECTION 4. BONDS

4-01. Faithful Performance Bond. As a part of the execution of this contract, the Contractor shall furnish a bond of a surety company or other securities providing equivalent protection such as cash, letter of credit, or certificates of deposit, acceptable to the City, conditioned upon the faithful performance of all covenants and stipulations under this contract. The amount of the bond shall be 100 percent of the total contract price, as this sum is set forth in the agreement.

4-02. Material and Labor Bond. As a part of the execution of this contract, the Contractor shall furnish a bond of a surety company or other securities providing equivalent protection such as cash, letter of credit or certificates of deposit acceptable to the City in a sum not less than 50 percent of the total contract price, as this sum is set forth in the agreement for the payment in full of all persons, companies or corporations who perform labor upon or furnish materials to be used in the work under this contract, in accordance with the provisions of Sections 3247 through 3252 inclusive of the Civil Code of the State of California and any acts amendatory thereof.

4-03. Defective Material and Workmanship Bond. As a condition precedent to the completion of this contract, the Contractor shall furnish a bond of a surety company acceptable to the City in an amount not less than 5 percent (5%) of the final contract price, to hold good for a period of one (1) year after the completion and acceptance of the work, to protect the City against the results of defective materials, workmanship and equipment during that time. This bond shall be delivered to the City before the final payment under this contract will be made.

4-04. Notification of Surety Companies. The surety companies shall familiarize themselves with all of the conditions and provisions of this contract and they waive the right of special notification of any change or modification of this contract or of extension of time, or decreased or increased work, or of the cancellation of the contract, or of any other act or acts by the City or its authorized agents, under the terms of this contract; and failure to so notify the aforesaid surety companies of changes shall in no way relieve the surety companies of their obligation under this contract.

SECTION 5. INSURANCE REQUIREMENTS FOR CONTRACTORS

(WITH CONSTRUCTION RISKS)

Contractor shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the Contractor, his or her agents, representatives, employees or subcontractors.

5-01. Minimum Scope of Insurance

Coverage shall be at least as broad as:

1. Insurance Services Office Commercial Liability Coverage (occurrence form CG 0001).
2. Insurance Services Office form number CA 0001 (Ed. 1/87) covering Automobile Liability, code 1 (any auto).
3. Worker's Compensation insurance as required by the State of California and Employer's Liability Insurance.
4. Course of Construction insurance covering for “all risks” of loss.

5-02. Minimum Limits of Insurance
Contractor shall maintain limits no less than:

1. General Liability: $1,000,000 per occurrence for bodily injury, personal injury and property damage including operations, products and completed operations. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit.
2. Automobile Liability: $1,000,000 per accident for bodily injury and property damage.
3. Employer's Liability: $1,000,000 per accident for bodily injury and property damage.
4. Course of Construction: Completed value of the project with no co-insurance penalty provisions.

5-03. Deductibles and Self-insured Retentions. Any deductibles or self-insured retentions must be declared to and approved by the City. At the option of the City, either: the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the City, its officers, officials, employees and volunteers; or the Contractor shall provide a financial guarantee satisfactory to the City guaranteeing payment of losses and related investigations, claim administration and defense expenses.

5-04. Other Insurance Provisions

The general liability and automobile liability policies are to contain, or be endorsed to contain, the following provisions:

1. The City, its officers, officials, employees and volunteers are to be covered as Additional Insured with respect to liability arising out of automobiles owned, leased, hired or borrowed by or on behalf of the contractor; and with respect to liability arising out of work or operations performed by or on behalf of the Contractor including materials, parts or equipment furnished in connection with such work or operations. General liability coverage can be provided in the form of an endorsement to the Contractor's insurance, or as a separate owner's policy.
2. The workers' compensation policy is to be endorsed with a waiver of subrogation. The insurance company, in its endorsement, agrees to waive all rights of subrogation against the City, its officers, officials, employees and volunteers for losses paid under the terms of this policy which arises from the work performed by the named insured for the City.
3. For any claims related to this project, the Contractor's insurance coverage shall be primary insurance as respects the City, its officers, officials, employees or volunteers. Any insurance or self-insurance maintained by the City, its officers, officials, employees or volunteers shall be excess of the Contractor's insurance and shall not contribute with it.
4. Each insurance policy required by this clause shall be endorsed to state that coverage shall not be canceled by either party, except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to the City.
5. Coverage shall not extend to any indemnity coverage for the active negligence of the additional insured in any case where an agreement to indemnify the additional insured would be invalid under Subdivision (b) of Section 2782 of Civil Code.
6. Course of Construction policies shall contain the following provisions:
   a.) The City shall be named as loss payee.
   b.) The insurer shall waive all rights of subrogation against the City.

5-05. Acceptability of Insurers

Insurance is to be placed with insurers with a current A.M. Best's rating of no less than the following:

A++ VII	A- VIII
A+ VII	B++ X
A VII	B+ X

5-06. Verification of Coverage. Contractor shall furnish the City with original certificates and amendatory endorsements effecting coverage required by this clause. The endorsements shall be on forms provided by the City or on other than the City's forms, provided those endorsements or policies conform to the requirements. All certificates and endorsements are to be received within 15 days from written notice of contract award, and the work shall not commence until the certificates and endorsements have been approved by the City. The City reserves the right to require complete certified copies of all required insurance policies, including endorsements affecting the coverage required by these Special Provisions at any time.

5-07. Subcontractors. Contractor shall include all subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverages for subcontractors shall be subject to all of the requirements stated herein.

SECTION 6. RESPONSIBILITIES AND RIGHTS OF CONTRACTOR

6-01. Legal Address of Contractor. Both the address given in the proposal and the Contractor's office in the vicinity of the work are hereby designated as places to either of which drawings, samples, notices, letters or other articles or communications to the Contractor may be mailed or delivered. The delivery at either of these places of any such thing from the City or its agents to the Contractor shall be deemed sufficient service thereof upon the Contractor and the date of such service shall be the date of such delivery. The address named in the proposal may be changed at any time by notice in writing from the Contractor to the City. Nothing herein contained shall be deemed to preclude or render inoperative the service of any drawing, sample, notice, letter or other article or communication to or upon the Contractor personally.

6-02. Office of Contractor at Site. During the performance of this contract, the Contractor shall maintain a suitable office at the site of the work which shall be the headquarters of a representative authorized to receive drawings and any such thing given to the said representatives or delivered at the Contractor's office at the site of work in his or her absence shall be deemed to have been given to the Contractor.

6-03. Attention to Work. The Contractor shall give his or her personal attention to and shall supervise the work to the end that it shall be prosecuted faithfully and when he or she is not personally present on the work, he or she shall at all reasonable times be represented by a competent superintendent or foreman who shall receive and obey all instructions or orders given under this contract and who shall have full authority to execute the same and to supply materials, tools and labor without delay and who shall be the legal representative of the Contractor. The Contractor shall be liable for the faithful observance of any instructions delivered to him or her or to his or her authorized representative.

6-04. Liability of Contractor. The Contractor shall do all of the work and furnish all labor, materials, tools and appliances, except as otherwise herein expressly stipulated, necessary or proper for performing and completing the work herein required in the manner and within the time herein specified. The mention of any specific duty or liability imposed upon the Contractor shall not be construed as a limitation or restriction of any general liability or duty imposed upon the Contractor by this contract, said reference to any specific duty or liability being made herein merely for the purpose of explanation.

The right of general supervision by the City shall not make the Contractor an agent of the City and the liability of the Contractor for all damages to persons or to public or private property, arising from the Contractor's execution of the work, shall not be lessened because of such general supervision.

Until the completion and final acceptance by the City of all the work under and implied by this contract, the work shall be under the Contractor's responsible care and charge. The Contractor shall rebuild, repair, restore and make good all injuries, damages, re-erections and repairs, occasioned or rendered necessary by causes of any nature whatsoever, excepting only acts of God and none other, to all or any portions of the work, except as otherwise stipulated.

To the fullest extent permitted by law, Contractor shall indemnify and hold harmless the City and its officers, directors, agents and employees from and against all claims, damages, losses and expenses including but not limited to attorneys' fees, costs of suit, expert witness fees and expenses and fees and costs of any necessary private investigators arising out of or resulting from the performance of the work, provided that any such claim, damage, loss or expense (1) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, other than the work itself, including the loss of use resulting therefrom and (2) is caused in whole or in part by any act or omission of the Contractor, any subcontractor, or anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder, or by the negligence or omission of a party indemnified herein.

In any and all claims against the City or any of its agents or employees by any employee of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under workers' or workmen's compensation acts, disability benefit acts, or other employee benefit acts. The obligation to indemnify shall extend to and include acts of the indemnified party which may be negligent or omissions which may cause negligence.

The City shall have the right to estimate the amount of such damage and to cause the City to pay the same and the amount so paid for such damage shall be deducted from the money due the Contractor under this contract; or the whole or so much of the money due or to become due the Contractor under this contract as may be considered necessary by the City, shall be retained by the City until such suits or claims for damages shall have been settled or otherwise disposed of and satisfactory evidence to that effect furnished to the City.

6-05. Protection of Persons and Property. The Contractor shall furnish such watchman, guards, fences, warning signs, walks and lights as shall be necessary and shall take all other necessary precautions to prevent damage or injury to persons or property.

All property line fences and improvements in the vicinity of the work shall be protected by the Contractor and, if they are injured or destroyed, they and any other property injured by the Contractor, his or her employees or agents, shall be restored to a condition as good as when he or she entered upon the work.

6-06. Protection of City Against Patent Claims. All fees, royalties or claims for any patented invention, article or method that may be used upon or in any manner connected with the work under this contract shall be included in the price bid for the work and the Contractor and his or her sureties shall protect and hold the City, together with all of its officers, agents, servants and employees, harmless against any and all demands made for such fees or claims brought or made on account of this contract. The Contractor shall, if requested by the Engineer, furnish acceptable proof of a proper release from all such fees or classes.

Should the Contractor, his or her agents, servants or employees, or any of them be enjoined from furnishing or using any invention, article, material or appliance supplied or required to be supplied or used under this contract, the Contractor shall promptly substitute other articles, materials or appliance, in lieu thereof, of equal efficiency, quality, finish, suitability and market value and satisfactory in all respects to the Engineer. Or, in the event that the Engineer elects, in lieu of such substitution, to have supplied and to retain and use, any such invention, article, material or appliance, as may by this contract be required to be supplied, in that event the Contractor shall pay such royalties and secure such valid licenses as may be requisite and necessary for the City, its officers, agents, servants and employees, or any of them, to use such invention, article, material or appliance without being disturbed or in any way interfered with by any proceeding in law

or equity on account thereof. Should the Contractor neglect or refuse to make the substitution promptly, or to pay such royalties and secure such licenses as may be necessary, then in that event the Engineer shall have the right to make such substitution, or the City may pay such royalties and secure such licenses and charge the cost thereof against any money due to the Contractor from the City or recover the amount thereof from him or her and his or her sureties notwithstanding final payment under this contract may have been made.

6-07. Protection of Contractor's Work Property. The Contractor shall protect his or her work, supplies and materials from damage due to the nature of the work, the action of the elements, trespassers, or any cause whatsoever under his or her control, until the completion and acceptance of the work. Neither the City nor any of its agents assumes any responsibility for collecting indemnity from any person or persons causing damage to the work of the Contractor.

6-08. Regulations and Permits. The Contractor shall secure and pay for all permits, give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the Plans and Special Provisions are at variance therewith, he or she shall promptly notify the Engineer in writing and any necessary changes shall be adjusted as provided in the contract for changes in the work. The contractor and any subcontractors shall each secure and maintain a valid City of Ukiah Business License. The City of Ukiah will issue a no fee encroachment permit to the Contractor allowing him or her to perform work within City right of way or within City property after the Contract Documents have been executed and insurance certificates and endorsements have been approved by the City.

6-09. Construction Utilities. The Contractor shall be responsible for providing for and in behalf of his or her work under this contract, all necessary utilities, such as special connection to water supply, telephones, power lines, fences, roads, watchmen, suitable storage places, etc.

6-10. Approval of Contractor's Plans. The approval by the Engineer of any drawing or any method of work proposed by the Contractor in accordance with paragraph 8-06 shall not relieve the Contractor of any of his or her responsibility for his or her errors therein and shall not be regarded as any assumption of risk or liability by the City or any officer or employee thereof and the Contractor shall have no claim under this contract on account of the failure or partial failure or inefficiency of any plan or method so approved. Such approval shall be considered to mean merely that the Engineer has no objection to the Contractor's using, upon his or her own full responsibility the plan or method approved.

6-11. Suggestions to the Contractor. Any plan or method of work suggested by the Engineer to the Contractor, but not specified or required, if adopted or followed by the Contractor in whole or in part, shall be used at the risk and responsibility of the Contractor; and the Engineer and the City shall assume no responsibility thereof.

6-12. Termination of Unsatisfactory Subcontracts. Should any subcontractor fail to perform in a satisfactory manner the work undertaken by him, such subcontract shall be terminated immediately by the Contractor upon notice from the Engineer.

6-13. Preservation of Stakes and Marks. The Contractor shall preserve carefully bench marks, reference points and stakes and in case of destruction he or she shall replace his or her stakes, reference points and bench marks and shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbance. Contractor’s attention is directed to Section 7-03 of these Special Provisions.

6-14. Assistance to Engineer. At the request of the Engineer the Contractor shall provide men from his or her force and tools, stakes and other materials to assist the Engineer temporarily in making measurements and surveys and in establishing temporary or permanent reference marks. Payment for such materials and assistance will be made as provided for under the caption "Extra Work," provided, however, that the cost of setting stakes and marks carelessly lost or destroyed by the Contractor's employees will be assessed to the Contractor.

6-15. Removal of Condemned Materials and Structures. The Contractor shall remove from the site of the work, without delay, all rejected and condemned materials or structures of any kind brought to or incorporated in the work and upon his or her failure to do so, or to make satisfactory progress in so doing, within forty-eight (48) hours after the service of a written notice from the Engineer, the condemned material or work may be removed by the City and the cost of such removal shall be taken out of the money that may be due or may become due the Contractor on account of or by virtue of this contract. No such rejected or condemned material shall again be offered for use by the Contractor under this Contract.

6-16. Proof of Compliance with Contract. In order that the Engineer may determine whether the Contractor has complied with the requirements of this contract, not readily enforceable through inspection and tests of the work and materials, the Contractor shall, at any time when requested, submit to the Engineer properly authenticated documents or other satisfactory proofs as to his or her compliance with such requirements.

6-17. Errors and Omissions. If the Contractor, in the course of the work, finds any errors or omissions in plans or in the layout as given by survey points and instruction, or if he or she finds any discrepancy between the plans and the physical conditions of the locality, he or she shall immediately inform the Engineer, in writing and the Engineer shall promptly verify the same. Any work done after such discovery, until authorized, will be done at the Contractor's risk.

6-18. Cooperation. The Contractor shall cooperate with all other contractors who may be performing work in behalf of the City and workmen who may be employed by the City on any work in the vicinity of the work to be done under this contract with the work of such contractors or workmen. he or she shall make good promptly, at his or her own expense, any injury or damage that may be sustained by other contractors or employees of the City at his or her hands.

Any difference or conflict which may arise between the Contractor and other contractors, or between the contractor and workmen of the City in regard to their work shall be adjusted and determined by the Engineer. If the work of the Contractor is delayed because of any acts or omissions of any other contractor or of the City, the Contractor shall on that account have no claim against the City other than for an extension of time.

6-19. Right of Contractor to Stop Work. Under the following conditions the Contractor shall have the right, if he or she so desires, to stop the work and terminate the contract upon ten (10) days written notice to the Engineer and recover from the City payment for all work actually performed and for all satisfactory materials actually delivered to the site of the work for permanent incorporation therein, all as may be shown by the estimate of the Engineer.

(1) If the work is stopped under an order of any court or other competent public authority for a period of time of three (3) months through no act or fault of the Contractor or of anyone employed by him.

(2) If the Engineer fails to issue the monthly certificate for payment in accordance with the terms of this contract.

(3) If the City fails to pay the Contractor within sixty (60) days after it shall have become due, as provided by the terms of this contract, any sum certified by the Engineer or awarded by the City.

All provided that if such action to terminate the contract be not instituted by the Contractor within ten (10) days after the alleged existence of such condition and if written notice of such action be not at that time delivered to the City and the Engineer, then such right shall lapse until another occasion arises according to this section.

6-20. Hiring and Dismissal of Employees. The Contractor shall employ only such foremen, mechanics and laborers as are competent and skilled in their respective lines of work and whenever the Engineer shall notify the Contractor that any person on the work is, in his or her opinion, incompetent, unfaithful, intemperate or disorderly, or refuses to carry out the provisions of this contract, or uses threatening or abusive language to any person on the work representing the City, or is otherwise unsatisfactory, such

person shall be discharged immediately from the work and shall not be re-employed upon it except with the consent of the Engineer.

6-21. Wage Rates.

1. Contractor shall pay all mechanics and laborers employed or working upon the site of the work unconditionally and without subsequent deductions or rebate on any account the full amounts due at the time of payment at wage rates not less than those contained in the applicable prevailing wage determination, regardless of any contractual relationship which may be alleged to exist between the Contractor and subcontractors and such laborers and mechanics.

2. Contractor shall comply with the California Labor Code Section 1775. In accordance with said Section 1775, Contractor shall forfeit as a penalty to the Owner, $50.00 (or the higher minimum penalty as provided in Section 1775(B)(ii) – (iii)) for each calendar day or portion thereof, for each workman paid less than the stipulated prevailing rates for such work or craft in which such workman is employed for any work done under the Contract by him or her or by any subcontractor under him or her in violation of the provisions of the Labor Code and in particular, Labor Code Sections 1770 to 1780, inclusive. In addition to said penalty and pursuant to Section 1775, the difference between such stipulated prevailing wage rates and the amount paid to each workman for each calendar day or portion thereof for which each workman was paid less than the stipulated prevailing wage rate shall be paid to each workman by the Contractor.

3. Pursuant to the provision of Section 1770 of the Labor Code of the State of California, Owner has ascertained the general prevailing rate of wages (which rate includes employer payments for health and welfare, vacation, pension and similar purposes) applicable to the work to be done, for straight time work. The holiday wage rate listed shall be applicable to all holidays recognized in the collective bargaining agreement of the particular craft, classification or type of workmen concerned. Copies of the General Prevailing Wage Determination are available on the Internet at web address: http://www.dir.ca.gov/DLSR/PWD The Contractor shall post the wage determination at the site of work in a prominent place where it can easily be seen by the workers.

4. City will not recognize any claim for additional compensation because the Contractor has paid any rate in excess of the prevailing wage rate obtained by the Contractor. The possibility of wage increases is one of the elements to be considered by the Contractor in determining his or her bid and will not in any circumstances be considered as the basis for a claim against the City.

5. The Labor Commissioner through the Division of Labor Standards Enforcement (DLSE) may at any time require contractors and subcontractors to furnish electronic certified payroll records directly to DLSE. Commencing with contracts awarded or after April 1, 2015, all contractors and subcontractors must furnish electronic certified payroll records directly to the DLSE.

6. Travel and Subsistence Payments.

   Contractor shall make travel and subsistence payments to each workman needed to execute the work in accordance with the requirements in Section 1773.8 of the Labor Code (Chapter 880, Statutes of 1968).

7. Apprentices.

   Attention is directed to the provisions in Sections 1777.5 (Chapter 1411, Statutes of 1968) and 1777.6 of the California Labor Code concerning the employment of apprentices by the Contractor or any subcontractor under him. Contractor and any subcontractor under him or her shall comply with the requirements of said sections in the employment of apprentices.

   Information relative to apprenticeship standards, wage schedules and other requirements may be obtained from the Director of Industrial Relations, ex officio the Administrator of Apprenticeship, San Francisco, California, or from the Division of Apprenticeship Standards and its branch offices.

6-22. Cleaning Up. The Contractor shall not allow the site of the work to become littered with trash and waste material, but shall maintain the same in a neat and orderly condition throughout the construction period. The Engineer shall have the right to determine what is or is not waste material or rubbish and the place and manner of disposal.

On or before the completion of the work, the Contractor shall without charge therefore carefully clean out all pits, pipes, chambers or conduits and shall tear down and remove all temporary structures built by him or her and shall remove rubbish of all kind from any of the grounds which he or she has occupied and leave them in first class condition.

6-23. Guaranty. All work shall be guarantied for a period of one year from the date of acceptance by the City. The Contractor shall promptly make all needed repairs arising out of defective materials, workmanship and equipment.

The City is hereby authorized to make such repairs if within ten days after the mailing of a notice in writing to the Contractor or his or her agent, the Contractor shall neglect to make or undertake with due diligence the aforesaid repairs, provided, however, that in case of an emergency where, in the opinion of the City delay would cause serious loss or damage, repairs may be made without notice being sent to the Contractor and the Contractor shall pay the costs thereof.

Pursuant to the provisions of Section 4-03 of these Special Provisions, the Contractor shall furnish a Defective Material and Workmanship Bond in an amount not less than 5 percent of the final contract price, which shall be effective for a period of one (1) year after the completion and acceptance of the work.

SECTION 7. RESPONSIBILITIES AND RIGHTS OF CITY

7-01. Authority of the Engineer. All work done under this contract shall be done in a workmanlike manner and shall be performed to the reasonable satisfaction of the Engineer, who shall have general supervision of all work included hereunder. To prevent disputes and litigation, the Engineer (1) shall in all cases determine the amount, quality, acceptability and fitness of the several kinds of work and materials which are to be paid for under this contract, (2) shall decide all questions relative to the true construction, meaning and intent of the Special Provisions and Drawings, (3) shall decide all questions which may arise relative to the classifications and measurements of quantities and materials and the fulfillment of this contract and (4) shall have the power to reject or condemn all work or material which does not conform to the terms of this contract. his or her estimate and decision in all matters shall be a condition precedent to an appeal for arbitration, or the right of the Contractor to receive, demand, or claim any money or other compensation under this agreement and a condition precedent to any liability on the part of the City to the Contractor on account of this contract. Whenever the Engineer shall be unable to act, in consequence of absence or other cause, then such engineer as the Engineer or the City shall designate, shall perform any and all of the duties and be vested with any or all of the powers herein given to the Engineer.

7-02. Inspection. The City will provide engineering personnel for the inspection of the work.

The Engineer and his or her representatives shall at all times have access to the work whenever it is in preparation or progress and the Contractor shall provide proper facilities for such access and inspection.

If the Special Provisions, the Engineer's instruction, laws, ordinances, or any public authority require any work to be specially tested or approved, the Contractor shall give the Engineer timely notice of its readiness for inspection and, if the inspection is by an authority other than the Engineer, of the date fixed for such inspection. Inspections by the Engineer shall be promptly made at the source of supply where practicable. If any work shall be covered up without approval or consent of the Engineer, it must, if required by the Engineer, be uncovered for examination and properly restored at the Contractor's expense.

Re-examination of any work may be ordered by the Engineer and, if so ordered, the work must be uncovered by the Contractor. If such work is found to be in accordance with the contract documents, the

City shall pay the cost of re-examination and replacement. If such work is not in accordance with the contract documents, the Contractor shall pay such cost.

Properly authorized and accredited inspectors shall be considered to be the representatives of the City limited to the duties and powers entrusted to them. It will be their duty to inspect materials and workmanship of those portions of the work to which they are assigned, either individually or collectively, under instructions of the Engineer and to report any and all deviations from the Drawings, Special Provisions and other contract provisions which may come to their notice. Any inspector may be considered to have the right to order the work entrusted to his or her supervision stopped, if in his or her opinion such action becomes necessary, until the Engineer is notified and has determined and ordered that the work may proceed in due fulfillment of all contract requirements.

7-03. Surveys. Contractor shall furnish all land surveys, establish all base lines and bench marks and make sufficient detailed surveys needed for working points, lines and elevations. The Contractor shall develop all slope stakes and batter boards. Contractor shall also develop all additional working points, lines and elevations as he or she may desire to facilitate his or her methods and sequence of construction.

7-04. Rights-of-Way. The City will provide all necessary rights-of-way and easements in or beneath which work will be performed by the Contractor under this contract.

7-05. Retention of Imperfect Work. If any portion of the work done or material furnished under this contract shall prove defective and not in accordance with the Plans and Special Provisions, and if the imperfection in the same shall not be of sufficient magnitude or importance to make the work dangerous or undesirable, the Engineer shall have the right and authority to retain such work instead of requiring the imperfect work to be removed and reconstructed, but he or she shall make such deductions therefor in the payments due or to become due the Contractor as may be just and reasonable.

7-06. Changes in the Work. The Engineer shall have the right, in writing, to order additions to, omissions from, or corrections, alterations and modifications in the line, grade, form, dimensions, plan, or kind or amount of work or materials herein contemplated, or any part thereof, either before or after the beginning of construction. However, the arithmetical sum of the cost to the City of additions and subtractions from the work under this contract shall not exceed 10 percent of original contract amount or $5,000, whichever is the greater, unless based upon a supplementary agreement to be made therefore.

The order of such additions, omissions, corrections, alterations and modifications shall be in writing and signed by the Engineer and, in order, shall then be binding upon the Contractor. The Contractor shall proceed with the work as changed and the value of such change shall be determined as provided for in section 10-07 of these Special Provisions.

Such alterations shall in no way affect, vitiate, or make void this contract or any part thereof, except that which is necessarily affected by such alterations and is clearly the evident intention of the parties to this contract.

7-07. Additional Drawings by City. The drawings made a part of this contract at the time of its execution are intended to be fairly comprehensive and to indicate in more or less detail the scope of the work. In addition to these drawings, however, the Engineer shall furnish such additional drawings from time to time during the progress of the work as are necessary to make clear or to define in greater detail the intent of the Special Provisions and the contract drawings and the Contractor shall make his or her work conform to all such drawings.

7-08. Additional and Emergency Protection. Whenever, in the opinion of the Engineer, the Contractor has not taken sufficient precautions for the safety of the public or the protection of the works to be constructed under this contract, or of adjacent structures or property which may be injured by the processes of construction on account of such neglect and whenever, in the opinion of the Engineer, an emergency shall arise and immediate action shall be considered necessary in order to protect public or private, personal

or property interest, then and in that event, the Engineer, with or without notice to the Contractor may provide suitable protection to the said interests by causing such work to be done and such material to be furnished as shall provide such protection as the Engineer may consider necessary and adequate.

The cost and expense of such work and material so furnished shall be borne by the Contractor and, if the same shall not be paid on presentation of the bills therefor, then such costs shall be deducted from any amounts due or to become due the Contractor.

The performance of such emergency work under the direction of the Engineer shall in no way relieve the Contractor from any damages which may occur during or after such precaution has been taken by the Engineer.

7-09. Suspension of Work. The City may at any time suspend the work or any part thereof by giving five (5) days written notice to the Contractor. The work shall be resumed by the Contractor within ten (10) days after the date fixed in the written notice from the City to the Contractor so to do. The City shall reimburse the Contractor for expense incurred by the Contractor in connection with the work under this contract as a result of such suspension.

If the work, or any part thereof, shall be stopped by the notice in writing aforesaid and if the City does not give notice in writing to the Contractor to resume work at a date within ten (10) days of the date fixed in the written notice to suspend, then the Contractor may abandon that portion of the work so suspended and he or she will be entitled to the estimates and payments for all work done on the portions so abandoned, if any, plus 5 percent of the value of the work so abandoned, to compensate for loss of overhead, plant expense and anticipated profit.

7-10. Right of City to Terminate Contract. If the Contractor should be adjudged a bankrupt, or if he or she should make a general assignment for the benefit of his or her creditors, or if a receiver should be appointed on account of his or her insolvency, or if he or she should persistently or repeatedly refuse or should fail, except in cases for which extension of time is provided, to supply sufficient properly skilled workmen or proper materials, or if he or she should fail to make prompt payments to subcontractors or for material or labor, or persistently disregard laws, ordinances or the instructions of the Engineer, or otherwise be guilty of a substantial violation of any provision of the contract, then the City, upon the certificate of the Engineer that sufficient cause exists to justify such action, may, without prejudice to any other right or remedy and after giving the Contractor seven days written notice, terminate the employment of the Contractor and take possession of the premises and of all materials, tools and appliances and finish the work by whatever method the City may deem expedient. In such case, the Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the contract price shall exceed the expense of finishing the work, including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. If such expense shall exceed such unpaid balance, the Contractor shall pay the difference to the City. The expense incurred by the City as herein provided and the damage incurred through the Contractor's default, shall be certified by the Engineer. In the event that a termination under this section is determined to be improper, such termination shall be deemed a constructive termination for convenience taken pursuant to section 7-12 below.

7-11. Use of Completed Portions. The City shall have the right to take possession of and use any completed or partially completed portions of the work, notwithstanding the time for completing the entire work or such portions which may not have expired; but such taking possession and using shall not be deemed an acceptance of any work not completed in accordance with the contract documents. If such prior use increases the cost of or delays the work, the Contractor shall be entitled to such extra compensation, or extension of time or both, as the Engineer may determine.

7-12. **Right of City to Terminate Contract for Convenience**. The City may terminate performance of the work called for by the contract documents in whole or, from time to time, in part, if the City determines that a termination is in the City's best interest. The Contractor shall terminate all or any part of the work upon delivery to the Contractor of a notice of termination specifying that the termination is for the convenience of the City, the extent of termination, and the effective date of such termination. After receipt

of notice of termination, and except as directed by the Engineer, the Contractor shall, regardless of any delay in determining or adjusting any amounts due under this termination for convenience clause, immediately proceed with the following obligations:

Stop work as specified in the notice.

Complete any work specified in the notice of termination in a least cost/shortest time manner while still maintaining the quality called for under the contract documents.

Leave the property upon which the Contractor was working and upon which the facility (or facilities) forming the basis of the contract documents is situated in a safe and sanitary manner such that it does not pose any threat to the public health or safety.

Terminate all subcontracts to the extent that they relate to the portions of the work terminated.

Place no further subcontracts or orders, except as necessary to complete the continued portion of the contract.

Submit to the Engineer, within ten (10) calendar days from the effective date of the notice of termination, all of the usual documentation called for by the contract documents to substantiate all costs incurred by the Contractor for labor, materials and equipment through the effective date of the notice of termination. Any documentation substantiating costs incurred by the Contractor solely as a result of the City's exercise of its right to terminate this Contract pursuant to this clause, which costs the contractor is authorized under the contract documents to incur, shall: (1) be submitted to and received by the Engineer no later than 30 calendar days after the effective date of the notice of termination; (2) describe the costs incurred with particularity; and (3) be conspicuously identified as “Termination Costs occasioned by the City's Termination for Convenience.”

Termination of the contract shall not relieve Surety of its obligation for any just claims arising out of or relating to the work performed. In the event that the City exercises its right to terminate this contract pursuant to this clause, the City shall pay the Contractor, upon the Contractor's submission of the documentation required by this clause and other applicable provisions of the contract documents, the following amounts:

All actual reimbursable costs incurred according to the provisions of this contract.

A reasonable allowance for profit on the cost of the Work performed, provided Contractor establishes to the satisfaction of the Engineer that it is reasonably probable that Contractor would have made a profit had the contract been completed and provided further, that the profit allowed shall in no event exceed fifteen (15%) percent of the costs.

A reasonable allowance for Contractor's administrative costs in determining the amount payable due to termination of the contract under this Article.

Notwithstanding any other provision of this Article, when immediate action is necessary to protect life and safety or to reduce significant exposure or liability, the City may immediately order Contractor to cease work on the project until such safety or liability issues are addressed to the satisfaction of the City or the contract is terminated.

SECTION 8. WORKMANSHIP, MATERIALS and EQUIPMENT

8-01. General Quality. Materials and equipment shall be new and of a quality equal to that specified or approved. Work shall be done and completed in a thorough and workmanlike manner.

8-02. Quality in Absence of Detailed Specifications. Whenever under this contract it is provided that the Contractor shall furnish materials or manufactured articles or shall do work for which no detailed specifications are set forth, the materials or manufactured articles shall be of the best grade in quality and workmanship obtainable in the market from firms of established good reputation, or, if not ordinarily carried in stock, shall conform to the usual standards for first-class materials or articles of the kind required, with due consideration of the use to which they are to be put. In general, the work performed shall be in full conformity and harmony with the intent to secure the best standard of construction and equipment of the work as a whole or in part.

8-03. Materials and Equipment Specified by Name. Whenever any material or equipment is indicated or specified by patent or proprietary name or by the name of the manufacturer, such specification shall be considered as used for the purpose of describing the material or equipment desired and shall be considered as followed by the words "or approved equal". The Contractor may offer any material or equipment which shall be equal in every respect to that specified, provided that written approval first is obtained from the Engineer.

8-04. Source of Materials. Price, fitness and quality being equal, preference shall be given by the Contractor for supplies grown, manufactured or produced in the State of California and, next, for such products partially produced in this State in accordance with Government Code Section 4332.

8-05. Storage of Materials. Materials shall be so stored to ensure the preservation of their quality and fitness for the work. They shall be so located and disposed that prompt and proper inspection thereof may be made.

8-06. Drawings, Samples and Tests. As soon as possible after execution of the contract, the Contractor shall submit to the Engineer, in quintuplicate, sufficient information including, if necessary, assembly and detail drawings to demonstrate fully that the equipment and materials to be furnished comply with the provisions and intent of these Special Provisions and Drawings. If the information thus submitted indicates the equipment or materials is acceptable, the Engineer will return one copy stamped with his or her approval; otherwise, one copy will be returned with an explanation of why the equipment or material is unsatisfactory. The Contractor shall have no claims for damages or for extension of time on account of any delay due to the revision of drawings or rejection of material. Fabrication or other work performed in advance of approval shall be done entirely at the Contractor's risk. After approval of equipment or material, the Contractor shall not deviate in any way from the design and specifications given without the written consent of the Engineer.

When requested by the Engineer, a sample or test specimens of the materials to be used or offered for use in connection with the work shall be prepared at the expense of the Contractor and furnished by him or her in such quantities and sizes as may be required for proper examination and tests, with all freight charges prepaid and with information as to their sources.

All samples shall be submitted before shipment and in ample time to permit the making of proper tests, analyses, or examination before the time at which it is desired to incorporate the material into the work. All tests of materials furnished by the Contractor shall be made by the Engineer. Samples shall be secured and tested whenever necessary to determine the quality of the material.

SECTION 9. PROSECUTION OF WORK

9-01. Equipment and Methods. The work under this contract shall be prosecuted with all materials, tools, machinery, apparatus and labor and by such methods as are necessary to the complete execution of everything described, shown, or reasonably implied. If at any time before the beginning or during the progress of the work, any part of the Contractor's plant or equipment, or any of his or her methods of execution of the work, appear to the Engineer to be unsafe, inefficient, or inadequate to insure the required quality or the rate of progress of the work, he or she may order the Contractor to increase or improve his or her facilities or methods and the Contractor shall comply promptly with such orders; but, neither compliance

with such orders nor failure of the Engineer to issue such orders shall relieve the Contractor from his or her obligation to secure the degree of safety, the quality of the work and the rate of progress required of the Contractor. The Contractor alone shall be responsible for the safety, adequacy and efficiency of his or her plant, equipment and methods.

9-02. Time of Completion. The Contractor shall promptly begin the work under this contract and shall complete and make ready for full use all portions of the project made the subject of this contract within the time set forth in the agreement bound herewith.

9-03. Avoidable Delays. Avoidable delays in the prosecution or completion of the work shall include all delays which might have been avoided by the exercise of care, prudence, foresight and diligence on the part of the Contractor. The City will consider as avoidable delays within the meaning of this contract (1) delays in the prosecution of parts of the work, which may in themselves be unavoidable, but do not necessarily prevent or delay the prosecution of other parts of the work nor the completion of the whole work within the time herein specified, (2) reasonable loss of time resulting from the necessity of submitting plans to the Engineer for approval and from the making of surveys, measurements, inspections, and testing and (3) such interruptions as may occur in the prosecution of the work on account of the reasonable interference of other contractors employed by the City which do not necessarily prevent the completion of the whole work within the time herein specified.

9-04. Unavoidable Delays. Unavoidable delays in the prosecution or completion of the work under this contract shall include all delays which may result, through cause beyond the control of the Contractor and which he or she could not have provided against by the exercise of care, prudence, foresight and diligence. Orders issued by the City changing the amount of work to be done, the quantity of material to be furnished or the manner in which the work is to be prosecuted and unforeseen delays in the completion of the work of other contractors under contract with the City will be considered unavoidable delays, so far as they necessarily interfere with the Contractor's completion of the whole of the work. Delays due to normally adverse weather conditions will not be regarded as unavoidable delays. However, truly abnormal amounts of rainfall, temperatures or other weather conditions for the location of the work and time of year may be considered as unavoidable delays if those conditions necessarily cause a delay in the completion of the work.

9-05. Notice of Delays. Whenever the Contractor foresees any delay in the prosecution of the work and, in any event, immediately upon the occurrence of any delay which the contractor regards as an unavoidable delay, he or she shall notify the Engineer in writing of the probability of the occurrence of such delay and its cause, in order that the Engineer may take immediate steps to prevent, if possible, the occurrence or continuance of the delay, or, if this cannot be done, may determine whether the delay is to be considered avoidable or unavoidable, how long it continues and to what extent the prosecution and completion of the work are to be delayed thereby.

9-06. Extension of Time. Should any delays occur which the Engineer may consider unavoidable, as herein defined, the Contractor shall, pursuant to his or her application, be allowed an extension of time proportional to said delay or delays, beyond the time herein set forth, in which to complete this contract; and liquidated damages for delay shall not be charged against the Contractor by the City during an extension of time granted because of unavoidable delay or delays.

Any claim by Contractor for a time extension based on unavoidable delays shall be based on written notice delivered to the Engineer within 15 days of the occurrence of the event giving rise to the claim. Failure to file said written notice within the time specified shall constitute a waiver of said claim. Notice of the full extent of the claim and all supporting data must be delivered to the Engineer within 45 days of the occurrence unless the Engineer specifies in writing a longer period. All claims for a time extension must be approved by the Engineer and incorporated into a written change order.

9-07. Unfavorable Weather and Other Conditions. During unfavorable weather and other conditions, the Contractor shall pursue only such portions of the work as shall not be damaged thereby. No portions of the work whose satisfactory quality or efficiency will be affected by any unfavorable conditions shall be

constructed while these conditions remain, unless, by special means or precautions approved by the Engineer, the Contractor shall be able to overcome them.

The Contractor shall be granted a time extension of one day for each unfavorable weather day which prevents him or her from placing concrete forms or placing and finishing concrete or asphalt concrete. Such unfavorable weather day is defined as a rain day where precipitation prevents the contractor from performing the work more than four (4) continuous hours within the authorized work period or a temperature day where the ambient temperature is below that specified for the placement of materials associated with the controlling work item for more than four (4) continuous work hours of the authorized work period.

9-08. Saturday, Sunday, Holiday and Night Work. No work shall be done between the hours of 6 p.m. and 7 a.m., nor on Saturdays, Sundays or legal holidays except such work as is necessary for the proper care and protection of work already performed, or except in cases of absolute necessity and in any case only with the permission of the Engineer.

It is understood, however, that night work may be established as a regular procedure by the Contractor if he or she first obtains the written permission of the Engineer and that such permission may be revoked at any time by the Engineer if the Contractor fails to maintain at night adequate force and equipment for reasonable prosecution and to justify inspection of the work.

9-09. Hours of Labor. Eight (8) hours of labor shall constitute a legal day's work and the Contractor or any subcontractor shall not require or permit more than eight hours of labor in a day from any person employed by him or her in the performance of the work under this contract, unless paying compensation for all hours worked in excess of eight (8) hours per day at not less than 1½ times the basic rate of pay. The Contractor shall forfeit to the City, as a penalty, the sum of twenty-five dollars ($25.00) for each workman employed in the execution of the contract by him or her or by any subcontractor, for each calendar day during which such laborer, workman, or mechanic is required or permitted to labor more than eight hours in violation of the provisions of Section 1810 to 1816, inclusive, (Article 3, Chapter 1, Part 7, Division 2) of the Labor Code of the State of California and any acts amendatory thereof.

SECTION 10. PAYMENT

10-01. Certification by Engineer. All payments under this contract shall be made upon the presentation of certificates in writing from the Engineer and shall show that the work covered by the payments has been done and the payments thereof are due in accordance with this contract.

10-02. Progress Estimates and Payment. The Engineer shall, within the first seven (7) days of each month, make an estimate of the value of the work performed in accordance with this contract during the previous calendar month.

The first estimate shall be of the value of the work satisfactorily completed in place and meeting the requirements of the contract. And every subsequent estimate, except the final estimate, shall be of the value of the work satisfactorily completed in place since the last preceding estimate was made; provided, however, that should the Contractor fail to adhere to the program of completion fixed in this contract, the Engineer shall deduct from the next and all subsequent estimates the full calculated accruing amount of the liquidated damages to the date of said estimate, until such time as the compliance with the program has been restored.

The estimate shall be signed by the Engineer and, after approval, the City shall pay or cause to be paid to the Contractor in the manner provided by law, an amount equal to 95 percent of the estimated value of the work satisfactorily performed and complete in place.

10-03. Substitution of Securities.

1. At such times that Public Contract Code Section 22300 is in effect Contractor may propose the substitution of securities of at least equal market value for any moneys to be withheld to ensure performance

under the Contract. Market value shall be determined as of the day prior to the date such substitution is to take place. Such substitution shall be made at the request and expense of the Contractor. The securities shall be one or more of the following types:

(a) Bonds or interest-bearing notes or obligations of the United States, or those for which the faith and credit of the United States are pledged for the payment of principal and interest.

(b) Bonds or interest-bearing notes on obligations that are guaranteed as to principal and interest by a federal agency of the United States.

(c) Bonds of the State of California, or those for which the faith and credit of the State of California are pledged for the payment of principal and interest.

(d) Bonds or warrants, including, but not limited to, revenue warrants, of any county, city, metropolitan water district, California water district, California water storage district, irrigation district in the State of California, municipal utility district, or school district of the State of California, which are rated by Moody's or Standard and Poor as A or better.

(e) Bonds, consolidated bonds, collateral trust debentures, consolidated debentures, or other obligations issued by federal land banks or federal intermediate credit banks established under the Federal Farm Loan Act, as amended; debentures and consolidated debentures issued by the Central Bank for Cooperatives and banks for cooperatives established under the Farm Credit Act of 1933, as amended; bonds, or debentures of the Federal Home Loan Bank Board established under the Federal Home Loan Bank Act; and stock, bonds, debentures and other obligations of the Federal National Mortgage Association established under the National Housing Act as amended and bonds of any Federal Home Loan Mortgage Corporation.

(f) Commercial paper of "prime" quality as defined by a nationally recognized organization which rates such securities. Eligible paper is further limited to issuing corporations: (1) organized and operating within the United States; (2) having total assets in excess of five hundred million dollars ($500,000,000); and (3) approved by the Pooled Money Investment Board of the State of California. Purchases of eligible commercial paper may not exceed 180 days' maturity, nor represent more than 10 percent of the outstanding paper of an issuing corporation.

(g) Bills of exchange or time drafts on and accepted by a commercial bank, otherwise known as bankers acceptances, which are eligible for purchase by the Federal Reserve System.

(h) Certificates of deposits issued by a nationally or state-chartered bank or savings and loan association.

(i) The portion of bank loans and obligations guaranteed by the United States Small Business Administration or the United States Farmers Home Administration.

(j) Student loan notes insured under the Guaranteed Student Loan Program established pursuant to the Higher Education Act of 1965, as amended (20 U.S.C. 1001, et seq.) and eligible for resale to the Student Loan Marketing Association established pursuant to Section 133 of the Education Amendments of 1972, as amended (20 U.S.C. 1087-2).

(k) Obligations issued, assumed or guaranteed by International Bank for Reconstruction and Development, the Inter-American Development Bank, the Asian Development Bank, or the Government Development Bank of Puerto Rico.

(l) Bonds, debentures and notes issued by corporations organized and operating within the United States. Such securities eligible for substitution shall be within the top three ratings of a nationally recognized rating service.

2. The securities shall be deposited with City or with any commercial bank as escrow agent, who shall arrange for transfer of such securities to the Contractor upon satisfactory completion of the contract. Any interest accrued or paid on such securities shall belong to the Contractor and shall be paid upon satisfactory completion of the contract.

The market value of the securities deposited shall at all times be maintained in an amount at least equal, in the sole judgment of City, to the moneys to be withheld pursuant to the Contract Documents to ensure performance of the Contract. In order to comply with this condition, Contractor shall deposit additional securities as necessary upon request by City or the escrow agent.

3. Upon acceptance of any Proposal that includes substituting securities for amounts withheld to ensure performance, a separate escrow agreement satisfactory in form and substance to City shall be prepared and executed by City, the Contractor and the escrow agent, which may be City. The escrow agreement shall specify, among other matters, value of securities to be deposited; procedures for valuing the securities and for adding or withdrawing securities to maintain the market value of the deposited securities at least equal to the amount of moneys which would otherwise be withheld; the terms and conditions of conversion to cash in case of the default by the Contractor; and terms, conditions and procedure for termination of the escrow. City shall have no obligation to enter any such Agreement that does not provide the City with the unilateral right to convert securities to cash and to gain immediate possession of the cash.

10-04. Acceptance. The work must be accepted by vote of the City Council of the City of Ukiah when the whole shall have been completed satisfactorily. The Contractor shall notify the Engineer, in writing, of the completion of the work, whereupon the Engineer shall promptly, by personal inspection, satisfy himself as to the actual completion of the work in accordance with the terms of the contract and shall thereupon recommend acceptance by the City Council.

10-05. Final Estimate and Payment. The Engineer shall, as soon as practicable after the final acceptance of the work done under this contract, make a final estimate of the amount of work done thereunder and the value thereof.

Such final estimate shall be signed by the Engineer, and after approval, the City shall pay or cause to be paid to the Contractor, in the manner provided by law, the entire sum so found to be due hereunder, after deducting therefrom all previous payments and such other lawful amounts as the terms of this contract prescribe.

In no case will final payment be made in less than thirty-five (35) days after the filing of the notice of completion with the County Recorder.

10-06. Delay Payments. Should any payment due the Contractor or any estimate be delayed, through fault of the City beyond the time stipulated, such delay shall not constitute a breach of contract or be the basis for a claim for damages, but the City shall pay the Contractor interest on the amount of the payment at the rate of 6 percent per annum for the period of such delay. The terms for which interest will be paid shall be reckoned, in the case of any monthly or progress payment, from the twentieth day of the month next succeeding the month in which the work was performed to the date of payment of the estimate; and in the case of the final estimate, from the forty-fifth day after acceptance to the date of payment of the final estimate.

The date of payment of any estimate shall be considered the day on which the payment is offered or mailed as evidenced by the records of the Treasurer of the City. If interest shall become due on any delayed payment, the amount thereof, as determined by the City, shall be added to a succeeding payment. If the interest shall become due on the final payment, it shall be paid on a supplementary voucher to interest or any sum or sums which, by the terms of this contract, the City is authorized to reserve or retain.

10-07. Extra Work and Work Omitted. Whenever corrections, alterations, or modifications of the work under this contract ordered by the Engineer and approved by the City increase the amount of work to be done, such added work shall be known as "extra work"; and when such corrections, alterations, or modifications decrease the amount of work to be done, such subtracted work shall be known as "work omitted".

When the Contractor considers that any changes ordered involve extra work, he or she shall immediately notify the Engineer in writing and subsequently keep him or her informed as to when and where extra work is to be performed and shall make claim for compensation therefor each month not later than the first day of the month following that in which the work claimed to be extra work was performed and he or she shall submit a daily complete statement of materials and labor used and expenses incurred on account of extra work performed, showing allocation of all materials, labor and expenses.

All such claims shall state the date of the Engineer's written order and the date of approval by the City authorizing the work on account of which claim is made. Unless such notification is made in writing within the time specified and unless complete statements of materials used and expenses incurred on account of such extra work are furnished as above required, the Contractor shall not be entitled to payment on account of extra work and Contractor shall be deemed to have waived the right to make any future claims for compensation for such extra work.

When changes decrease the amount of work to be done, they shall not constitute a claim for damages on account of anticipated profits on the work that may be omitted.

10-08. Compensation for Extra Work or Work Omitted. Whenever corrections, additions, or modifications in the work under this contract change the amount of work to be done or the amount of compensation due the Contractor, excepting increases or decreases in contract items having unit contract prices for each measurable quantity installed in place, and such changes have been ordered in writing by the Engineer and approved by the City prior to the Contractor performing the extra work, then a price may be agreed upon. Failing such an agreement in price, the Contractor shall be compensated for performing extra work pursuant to the provisions of Section 4-1.03 D, "Extra Work", and Section 9-1.03,"Force Account Payment" of the Standard Specifications.

This method of determining the price of work shall not apply to the performance of any work which is required or reasonably implied to be performed or furnished under this contract.

10-09. Compensation to the City for Extension of Time. In case the work called for under this contract is not completed within the time limit stipulated herein, the City shall have the right as provided hereinabove, to extend the time of completion thereof. If the time limit be so extended, the City shall have the right to charge to the Contractor and to deduct from the final payment for the work the actual cost to the City of engineering, inspection, superintendence and other overhead expenses which are directly chargeable to the contract and which accrue during the period of such extension, except that the cost of final unavoidable delays shall not be included in such charges.

10-10. Liquidated Damages for Delay. It is agreed by the parties to the contract that time is of the essence and that, in case all the work is not completed before or upon the expiration of the time limit as set forth, damage, other than those cost items identified in section 10-09, will be sustained by the City and that it is and will be impracticable to determine the actual amount of damage by reason of such delay; and it is therefore agreed that the Contractor will pay to the City the sum of five hundred dollars ($500.00) per day for each and every calendar day's delay beyond the time prescribed.

In compliance with the provisions of California Public Contract Code § 7102, the Contractor will be compensated for damages incurred due to delays in completing the work due solely to the fault of the City, where such delay is unreasonable under the circumstances and not contemplated by the parties. The Contractor and City agree that determining actual damages is impracticable and extremely difficult. As such, the Contractor shall be entitled to the appropriate time extension and to payment of liquidated damages in the sum of $250 per day of delay in excess of the time specified for the completion of the work. Such amount shall constitute the only payment allowed and shall necessarily include all overhead (direct or indirect), all profit, all administrative costs, all bond costs, all labor, materials, equipment and rental costs, and any other costs, expenses and fees incurred or sustained as a result of such delay. The Contractor expressly agrees to be limited solely to the liquidated damages for all such delays as defined in this subsection.

SECTION 11. MISCELLANEOUS

11-01. Notice. Whenever any provision of the contract documents requires the giving of written notice, it shall be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice. If mailed, the notice shall be deemed received on the date of delivery stated in the return receipt.

11-02. Computation of Time. When any period of time is referred to in the Contract Documents by days, it shall be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day shall be omitted from the computation.

11-03. Claims Procedure

Contractor shall timely comply with all notices and requests for changes to the contract time or contract price, as a prerequisite to filing any claim governed by this Article. The failure to timely submit a notice of delay or notice of change, or to timely request a change to the contract time or contract price, or to timely provide any other notice or request required herein shall constitute a waiver of the right to further pursue the claim under the contract or at law.

A. **Intent.** Effective January 1, 1991, Section 20104 et seq., of the California Public Contract Code prescribes a process utilizing informal conferences, non-binding judicial supervised mediation, and judicial arbitration to resolve disputes on construction claims of $375,000 or less. Effective January 1, 2017, Section 9204 of the Public Contract Code prescribes a process for negotiation and mediation to resolve disputes on construction claims. The intent of this Article is to implement Sections 20104 et seq. and Section 9204 of the California Public Contract Code. This Article shall be construed to be consistent with said statutes.

B. **Claims.** For purposes of this Article, “Claim” means a separate demand by the Contractor, for (A) a time extension, (B) payment of money or damages arising from work done by or on behalf of the Contractor pursuant to the Contract, or (C) an amount the payment of which is disputed by the District. Claims governed by this Article may not be filed unless and until the Contractor completes all procedures for giving notice of delay or change and for the requesting of a time extension or change order. Claims governed by this Article must be filed no later than the date of final payment. The claim shall be submitted in writing to the District and shall include on its first page the following in 16 point capital font: “THIS IS A CLAIM.” Furthermore, the claim shall include the documents necessary to substantiate the claim. Nothing herein is intended to extend the time limit or supersede notice requirements otherwise provided by contract for the filing of claims, including all requirements pertaining to compensation or payment for extra work, disputed work, and/or changed conditions. Failure to follow such contractual requirements shall bar any claims or subsequent lawsuits for compensation or payment thereon.

C. **Supporting Documentation.** The Contractor shall submit all claims in the following format:

Summary of claim merit and price, reference Contract Document provisions pursuant to which the claim is made

List of documents relating to claim:

Specifications
Drawings
Clarifications (Requests for Information)
Schedules
Other
Chronology of events and correspondence
Analysis of claim merit
Analysis of claim cost
Time impact analysis in CPM format

If Contractor's claim is based in whole or in part on an allegation of errors or omissions in the Drawings or Specifications for the project, Contractor shall provide a summary of the percentage of the claim subject to design errors or omissions and shall obtain a certificate of merit in support of the claim of design errors and omissions.

D. City's Response. Upon receipt of a claim pursuant to this Article, City shall conduct a reasonable review of the claim and, within a period not to exceed 45 days, shall provide the Contractor a written statement identifying what portion of the claim is disputed and what portion is undisputed. Any payment due on an undisputed portion of the claim will be processed and made within 60 days after the City issues its written statement.

If the City needs approval from its governing body to provide the Contractor a written statement identifying the disputed portion and the undisputed portion of the claim, and the City's governing body does not meet within the 45 days or within the mutually agreed to extension of time following receipt of a claim sent by registered mail or certified mail, return receipt requested, the City shall have up to three days following the next duly publicly noticed meeting of the City's governing body after the 45-day period, or extension, expires to provide the Contractor a written statement identifying the disputed portion and the undisputed portion.

Within 30 days of receipt of a claim, the City may request in writing additional documentation supporting the claim or relating to defenses or claims the District may have against the Contractor. If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of City and the Contractor. The City's written response to the claim, as further documented, shall be submitted to the Contractor within 30 days (if the claim is less than $15,000, within 15 days) after receipt of the further documentation, or within a period of time no greater than that taken by the Contractor in producing the additional information or requested documentation, whichever is greater.

E. Meet and Confer. If the Contractor disputes the City's written response, or the City fails to respond within the time prescribed, the Contractor may so notify the City, in writing, either within 15 days of receipt of the City's response or within 15 days of the City's failure to respond within the time prescribed, respectively, and demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand, the City shall schedule a meet and confer conference within 30 days for settlement of the dispute.

F. Mediation. Within 10 business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the City shall provide the Contractor a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the City issues its written statement. Any disputed portion of the claim, as identified by the Contractor in writing, shall be submitted to nonbinding mediation, with the City and the Contractor sharing the associated costs equally. The City and Contractor shall mutually agree to a mediator within 10 business days after the disputed portion of the claim has been identified in writing, unless the parties agree to select a mediator at a later time.

If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator.

For purposes of this section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.

Unless otherwise agreed to by the City and the Contractor in writing, the mediation conducted pursuant to this section shall excuse any further obligation under Public Contract Code Section 20104.4 to mediate after litigation has been commenced.

The mediation shall be held no earlier than the date the Contractor completes the work or the date that the Contractor last performs work, whichever is earlier. All unresolved claims shall be considered jointly in a single mediation, unless a new unrelated claim arises after mediation is completed.

G. Procedures After Mediation. If following the mediation, the claim or any portion remains in dispute, the Contractor must file a claim pursuant to Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code prior to initiating litigation. For purposes of those provisions, the running of the period of time within which a claim must be filed shall be tolled from the time the Contractor submits his or her written claim pursuant to subdivision (a) until the time the claim is denied, including any period of time utilized by the meet and confer conference.

H. Civil Actions. The following procedures are established for all civil actions filed to resolve claims of $375,000 or less:

Within 60 days, but no earlier than 30 days, following the filing or responsive pleadings, the court shall submit the matter to non-binding mediation unless waived by mutual stipulation of both parties or unless mediation was held prior to commencement of the action in accordance with Public Contract Code section 9204 and the terms of this Contract. The mediation process shall provide for the selection within 15 days by both parties of a disinterested third person as mediator, shall be commenced within 30 days of the submittal, and shall be concluded within 15 days from the commencement of the mediation unless a time requirement is extended upon a good cause showing to the court.

If the matter remains in dispute, the case shall be submitted to judicial arbitration pursuant to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, notwithstanding Section 1114.11 of that code. The Civil Discovery Act of 1986 (Article 3 (commencing with Section 2016) of Chapter 3 of Title 3 of Part 4 of the Code of Civil Procedure) shall apply to any proceeding brought under this subdivision consistent with the rules pertaining to judicial arbitration. In addition to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, (A) arbitrators shall, when possible, be experienced in construction law, and (B) any party appealing an arbitration award who does not obtain a more favorable judgment shall, in addition to payment of costs and fees under that chapter, also pay the attorney's fees on appeal of the other party.

I. Government Code Claims. In addition to any and all contract requirements pertaining to notices of and requests for compensation or payment for extra work, disputed work, construction claims and/or changed conditions, the Contractor must comply with the claim procedures set forth in Government Code Sections 900, et seq. prior to filing any lawsuit against the City. Such Government Code claims and any subsequent lawsuit based upon the Government Code claims shall be limited to those matters that remain unresolved after all procedures pertaining to extra work, disputed work, construction claims, and/or changed conditions have been followed by Contractor. If no such Government Code claim is submitted, or if the prerequisite contractual requirements are not satisfied, no action against the City may be filed. A Government Code claim must be filed no earlier than the date the work is completed or the date the Contractor last performs work on the project, whichever occurs first. A Government Code claim shall be inclusive of all unresolved claims unless a new unrelated claim arises after the Government Code claim is submitted.

J. Non-Waiver. The City's failure to respond to a claim from the Contractor within the time periods described in this Article or to otherwise meet the time requirements of this Article shall result in the claim being deemed rejected in its entirety.

11-04. Litigation and Forum Selection. Contractor and City stipulate and agree that any litigation relating to the enforcement or interpretation of this contract, arising out of Contractor's performance or relating in any way to the work shall be brought in Mendocino County and that venue will lie in Mendocino County.

Except as otherwise expressly provided by law, the parties waive any objections they might otherwise have to the propriety of jurisdiction or venue in the state courts in Mendocino County and agree that California law shall govern any such litigation.

The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto and, in particular but without limitation, the warranties, guaranties and obligations imposed upon the Contractor and all of the rights and remedies available to the City thereunder, shall be in addition to and shall not be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by law or contract, by special warranty or guaranty, or by other provisions of the contract documents and the provisions of this paragraph shall be as effective as if repeated specifically in the contract documents in connection with each particular duty, obligation, right and remedy to which they apply. All warranties and guaranties made in the contract document shall survive final payment and termination or completion of this contract. The City disclaims an express or implied warranty that the plans and specifications identify all site conditions that could affect the time or cost to complete the Work.

11-05. Waiver. The Contractor shall strictly comply with all notices and other contract requirements. Waiver by the City of any failure of the Contractor to comply with any term of the contract, including the notice provisions, shall not be deemed a waiver of a subsequent breach.

TECHNICAL SPECIFICATIONS

SECTION 12. GENERAL INFORMATION

12-01. Location and Scope of Work. All of the work to be performed is within the City of Ukiah and consists of following:

1. Demolition of existing equipment, piping and valves, concrete and various other items in the DAFT and Dewatering areas as shown on the drawings

2. Assembly and installation of a Suspended Air Flotation (SAF) System that was pre-purchased by the Owner

3. Furnishing and installing a container structure to house the Suspended Air Flotation Feed System

4. Furnishing and installation of two Polymer Systems in the existing DAFT Building

5. Installation of 8-inch diameter piping from the Plant Drain Pump Station to a connection point with the 8-inch Washwater Piping

6. Furnishing and installation of variable speed drives for the existing Washwater Pumps and Primary Scum Pumps

7. Assembly and installation of a Screw Press Dewatering and Polymer Blending System that was pre-purchased by the Owner

8. Construction of a concrete containment area for dewatered sludge cake

9. Furnishing and installing all mechanical, structural, electrical and instrumentation and controls associated with above items and as shown on the drawings

General locations of the work are at the Ukiah WWTP, 300 Plant Road, Ukiah, CA 95482.

The Contractor should familiarize himself with the local conditions of the project sites. Failure to do so will in no way relieve him of the responsibility for performing any of the work or operations required as a part of this contract. Further information regarding the work or these specifications can be obtained from Seth Strader at (707) 463-6233.

12-02. Arrangement of Technical Specifications. The Technical Specifications are arranged in sections covering the various phases of work as follows:

Section No.	Title
12	General Information
13	Construction Details (Not Used)
14	Exclusions from General Conditions
15	Amendments to General Conditions

12-03. Arrangement of Plans. General locations and linear quantities of the work are shown in Appendix "A". A map will be provided to the successful bidder showing the exact locations of the work to be done.

12-04. Business Licenses. The Contractor and any subcontractors shall each secure and maintain a valid City of Ukiah Business License prior to the start of any portion of the work.

12-05. Permits. The Contractor shall provide, procure, and pay for all permits required to complete this work.

12-06. Standard Specifications and Standard Plans. The Standard Specifications and Standard Plans of the California State Department of Transportation, 2018, are hereby made a part of these Special Provisions and are hereinafter referred to as "California Standard Specifications" and "California Standard Plans."

Whenever in the California Standard Specifications and the California Standard Plans the following terms are used, they shall be understood to mean and refer to the following:

Department of Transportation - The City Council.

Director of Public Works - The City of Ukiah Director of Public Works.

Engineer - The Engineer, designated by the City Council, acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties entrusted to them.

Laboratory - The designated laboratory authorized by the City of Ukiah to test materials and work involved in the contract.

State - The City of Ukiah

Other terms appearing in the California Standard Specifications and the California Standard Plans shall have the intent and meaning specified in Section I, Definition of Terms of the California Standard Specifications.

In case of discrepancy between the contract documents, the order of precedence from the highest to lowest is as follows:

1. (City) Special Provisions
2. (City) Project Plans
3. City Standard Plans and Details
4. California Standard Plans
5. California Standard Specifications

12-07. Temporary Facilities. All temporary facilities are the responsibility of the Contractor. The removal of said facilities shall be the responsibility of the Contractor. The Contractor shall be responsible for any and all damages to existing facilities which are a result of the work.

12-08. Public Convenience and Safety. The Contractor shall conduct operations so as to cause the least possible obstruction and inconvenience to public traffic. The Contractor shall, at his or her expense, furnish such flag persons and furnish, erect, construct and maintain such fences, barriers, lights, signs, detours, pedestrian walkways, driveway ramps and bridging as may be necessary to give adequate warning to the public that work is in progress and that dangerous conditions exist, to provide access to abutting properties and to permit the flow of pedestrian and vehicular traffic to safely and expeditiously pass the work.

12-09. Maintaining Traffic. Attention is directed to Section 7-1.08, "Public Convenience," 7-1.09, "Public Safety," 7-1.092, "Lane Closure," and 7-1.095, "Flagging Costs," of the California Standard Specifications.

Streets shall be open to through vehicular traffic during non-working hours. All public traffic shall be permitted to pass through the work with as little inconvenience and delay as possible.

Full costs for "Maintaining Traffic", including "Flagging Costs", shall be considered as included in the various items of work and no additional compensation will be made.

12.10. Stream Pollution. The Contractor shall exercise every reasonable precaution to prevent muddying or silting of live streams, and the Contractor's attention is called to the fact that the terms of this contract do not relieve him or her of responsibility for compliance with Sections 5650 and 12015 of the Fish and Game Code or other applicable statutes relating to pollution prevention or abatement.

12-11. Warranties. Unless otherwise indicated, the Contractor shall warrant all materials provided and work performed under this contract for a period of one year from the date of final acceptance. He shall replace promptly and at his own expense any materials and/or workmanship which fail during this warranty period.

12-12. Utilities. No water, sewer or electrical services will be provided by the owner. It is the Contractor's sole responsibility to arrange such services as necessary.

12-13. Preconstruction Conference. A preconstruction conference will be held before any work will be allowed to commence. This meeting will cover inspection, schedule for work, and among other items, the responsibilities and procedures of each of the interested parties to assure that the project will be completed in accordance with the contract documents.

12-14. Safety Requirements. The Contractor shall comply with all pertinent provisions of the Department of Labor "Safety and Health Regulations for Construction (29 FCS Part 1518, 36 CFR 7340)", with additions or modifications thereto, in effect during construction of this project.

SECTION 13 - CONSTRUCTION DETAILS (NOT USED)

SECTION 14. EXCLUSIONS FROM GENERAL CONDITIONS

14-01. Provisions to be Excluded from General Conditions. The following designated provisions of the General Conditions are hereby determined to be inapplicable to the proposed work and, therefore, are hereby excluded from the terms of the Notice to Bidders, Proposal, Agreement and other contract documents as though entirely omitted from said General Conditions:

Section 6-02. Office at the Site

Section 7-03. Surveys

No other exclusions.

SECTION 15. AMENDMENTS TO GENERAL CONDITIONS

15-01. Sections of General Conditions to be Amended.

The following designated sections of the Special Provisions are hereby amended to read as follows:

No amendments.

CERTIFICATES AND DOCUMENTS

BID SUBMITTAL CHECKLIST

The following is a checklist to assist you in your submission of your bid documents. Please make sure you include the following when submitting your bid documents to reduce the risk of having your bid rejected:

Did you include?...

- **Proposal** (Page 33)
  - Unit prices filled out clearly.
  - Extended prices filled out clearly and calculated correctly
  - Total bid amount filled out clearly and calculated correctly
  - Sign the proposal, and provide complete information
  - CLSB No. and expiration date
  - Department of Industrial Relations Public Works Contractor Registration Number

- **Fair Employment Practices Certification** (Page 37)
  - Filled out completely per instruction

- **Worker's Compensation Certificate** (Page 38)
  - Filled out completely per instruction

- **Certification of Non-Discrimination in Employment** (Page 39)
  - Filled out completely per instruction

- **List of Proposed Subcontractors** (Page 40)
  - Filled out completely per instruction

- **Statement of Experience** (Page 41)

- **Signature of Bidder** (Page 42)
  - Filled out completely per instruction
  - Authorized signature provided

- **Bidder's Bond** (Page 43)
  - Filled out completely per instruction

- **Non-Collusion Affidavit** (Page 45)
  - Filled out completely per instruction
  - Notarized

- **Addenda Issued**
  - Check the City website for any addenda issued: www.cityofukiah.com/purchasing.

CITY OF UKIAH
MENDOCINO COUNTY, CALIFORNIA

PROPOSAL

FOR
THICKENING AND DEWATERING IMPROVEMENTS
Specification No. 23-02

The undersigned, as bidder,

declares that he or she has examined thoroughly all of the contract documents herein contained, that this proposal is made without collusion with any other person, firm or corporation and that all laws and ordinances relating to the interest of public officers in this contract have been complied with in every respect.

AND he or she proposes and agrees, if this proposal is accepted,

1) that he or she will contract with the City of Ukiah, Mendocino County, California, in the form of the copy of the agreement herein contained

    a) to provide all necessary machinery, tools, apparatus and other means of construction;

    b) to furnish all materials;

    c) to provide all superintendence, overhead expenses and all labor and expenses of whatever nature necessary to complete the job in conformity with the specifications and drawings and other contract provisions herein or reasonably implied hereby or as necessary to complete the work in the manner and within the time named herein and according to the requirements and to the reasonable satisfaction of the City Engineer;

    d) to pay all charges of freight transportation and hauling;

2) that he or she indemnifies the City against any loss or damage arising from any act of the undersigned as Contractor; and

3) that he or she will accept as full payment therefor the following sums:

BIDDING SCHEDULE

In the case of any discrepancy between the unit price and the total set forth for the item, the unit price shall prevail; provided, however, that if the amount set forth as a unit price is ambiguous, unintelligible or uncertain for any reason, or is omitted, or in the case of lump sum items, is not the same amount as the entry in the "Total" column, then the amount set forth in the "Total" column for the item shall prevail in accordance with the following:

As to lump sum items, the amount set forth in the "Total" column shall be the unit price;

As to unit basis items, the amount set forth in the "Total" column shall be divided by the estimated quantity for the item and the price thus obtained shall be the unit price.

The Total Base Bid shall be the sum of the items in the "Total" column. In case of discrepancy between the sum of the items in the "Total" column and the amount entered as Total Base Bid, the sum of the "Total" column items shall prevail. The bid comparison will be based on the sum of the items in the "total" column for each bidder.

The Unit prices for the various Construction Items below include all costs associated with the General Conditions, Special Provisions, Requirements of the Construction Contract, and represent the total, complete, in-place cost for each specific Construction Item in accordance with the Construction Documents, including all elements, work components, accessories, and connections, shown in applicable details or required to yield a complete, sound and functional component or system appropriate for its intended function, whether or not such is specifically described or listed in any description of measurement or payment. The total amount of the Construction items below shall represent the total and complete cost of the fully functional Project. All work not specifically listed below be required to complete the work of the various construction items and the cost of such shall be considered as included throughout the various unit prices indicated.

Lowest bid will be based on the lowest Base Bid.

NAME OF BIDDER:	
SPEC No.:	23-02
PROJECT NAME:	Thickening and Dewatering Improvements

Signature

ITEM#	DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE	TOTAL
1	Mobilization/Demobilization	LS	1	$_____	$_____
2	Workers Protection and Safety/Shoring	LS	1	$_____	$_____
3	SAF System (Area 70)	LS	1	$_____	$_____
4	Dewatering System (Area 75)	LS	1	$_____	$_____
5	Temporary Dewatering System	Dry Tons	100	$_____	$_____
6	VFDs for Washwater Pumps	LS	1	$_____	$_____
7	VFDs for Primary Scum Pumps	LS	1	$_____	$_____
8	Mobilization and Demobilization of Temporary Dewatering Equipment	LS	1	$_____	$_____
				TOTAL BID ==>>	$_____

We, the undersigned, acknowledge that the City Council has reserved the right to reject any or all bids and to determine which proposal is, in its opinion, the lowest responsive bid from a responsible bidder and that which it deems in the best interest of the City to accept. We, the undersigned, further agree, if this proposal shall be accepted, to sign the agreement and to furnish the required bonds with satisfactory surety, or sureties, within fifteen (15) calendar days after written notice that the contract is ready for signature; and, if the undersigned shall fail to contract, as aforesaid, it shall be understood that he or she has abandoned the contract and that, therefore, this proposal shall be null and void and the proposal guaranty accompanying this proposal, or the amount of said guaranty, shall be forfeited to and become the property of the City. Otherwise, the proposal guaranty accompanying this proposal shall be returned to the undersigned.

Witness our hands this day of _____, 20____.

Licensed in accordance with an act providing for the registration of California Contractors License No. _____, expiration date _____.

THE CONTRACTOR'S LICENSE NUMBER AND EXPIRATION DATE STATED HEREIN ARE MADE UNDER PENALTY OF PERJURY.

Department of Industrial Relations Public Works Contractor Registration Number:_____

Signature of bidder or bidders, with business name, address, phone number and fax number:

_____

_____

_____

_____

Notice: In the case of a corporation, give below the addresses of the principal office thereof and names and addresses of the President, Secretary, Treasurer.

_____

_____

_____

FAIR EMPLOYMENT PRACTICES CERTIFICATION

TO:_____

_____

The undersigned, in submitting a bid for performing the following work by Contract, hereby certifies that he or she has or will meet the standards of affirmative compliance with the Fair Employment Practices requirements of the Special Provisions contained herein.

THICKENING AND DEWATERING IMPROVEMENTS

_____
(Signature of Bidder)

Business Mailing Address:

_____

_____

_____

Business Location:

_____

_____

(The bidder shall execute the certification of this page prior to submitting his or her proposal.)

WORKER'S COMPENSATION CERTIFICATE

I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for Worker's Compensation or undertake self-insurance in accordance with the provisions of that code and I will comply with such provisions before commencing the performance of the work of this contract.

Witness my hand this_____ day of _____, 20____

Signature of Bidder, with Business Address:

_____

_____

_____

_____

CERTIFICATION OF NONDISCRIMINATION IN EMPLOYMENT

The bidder represents that he or she has/has not, participated in a previous contract or subcontract subject to either the equal opportunity clause herein or the clause contained in Section 301 of Executive Order 10925; that he or she has/has not, filed all required compliance reports; and that representations indicating submission of required compliance prior to subcontract awards.

Signature and address of Bidder:

_____ Date_____

_____

_____

_____

(This certification shall be executed by the bidder in accordance with Section 60-1.6 of the Regulations of the President's Committee on Equal Employment Opportunity for implementing Executive Orders 10925 and 11114.)

LIST OF PROPOSED SUBCONTRACTORS

In compliance with the provisions of Sections 4100-4108 of the California Public Contract Code and any amendments thereof, each bidder shall set forth (a) the name and location of the place of business of each subcontractor who will perform work or labor or render service in or about the construction site or a subcontractor licensed by the State of California who, under subcontract to the prime contractor, specially fabricates and installs a portion of the work or improvement according to detailed drawings contained in the plans and specifications in an amount in excess of one-half of 1 percent of the total bid and (b) the California Contractor License Number for each subcontractor, and (c) the portion of the work to be done by each subcontractor.(See General Conditions Section 1-09.) Include with the name of each sub-contractor their Department of Industrial Relations Public Works Contractor Registration Number.

SUBCONTRACTOR NAME	SUBCONTRACTOR LICENSE NUMBER	SUBCONTRACTOR DIR REGISTRATION NUMBER	SUBCONTRACTOR BUSINESS ADDRESS	DESCRIPTION OF WORK

STATEMENT OF EXPERIENCE OF BIDDER

The bidder is required to state below what work of similar magnitude or character he or she has done and to give references that will enable the City Council to judge of his or her experience, skill and business standing and his or her ability to conduct work as completely and rapidly as required under the terms of the contract.

SIGNATURE(S) OF BIDDER

Accompanying this proposal is _____

(insert the words "cash ($)", "cashier's check" or "bidder's bond", as the case may be) in an amount equal to at least 10 percent of the bid.

The names of all persons interested in the foregoing proposal as principals are as follows:

IMPORTANT NOTICE: If bidder or other interested person is a corporation, provide the legal name of corporation and also the names of the president, secretary, treasurer and manager thereof. If a co-partnership, provide the true name of firm and also the names of all individual co-partners composing the firm. If bidder or other interested person is an individual, provide the first and last names in full.

_____

_____

_____

Licensed in accordance with an act providing for the registration of Contractors:

License No. _____, License Expiration Date _____.

Signature(s) of Bidder: _____

_____

_____

NOTE: If bidder is a corporation, the legal name of the corporation shall be set forth above together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation; if bidder is a co-partnership, the true name of the firm shall be set forth above together with the signature of the partner or partners authorized to sign contracts in behalf of the co-partnership; and if bidder is an individual, his or her signature shall be placed above. If a member of a partnership, a Power of Attorney must be on file with the Department prior to opening bids or submitted with the bid; otherwise, the bid will be disregarded as irregular and unauthorized.

Business address: _____

_____

Place of residence: _____

_____

Dated: _____

CITY OF UKIAH
Mendocino County, California

BIDDER'S BOND

KNOW ALL MEN BY THESE PRESENTS,

That we, _____

_____, as PRINCIPAL and

_____

_____, as SURETY,

are held and firmly bound unto the City of Ukiah in the penal sum of 10 PERCENT OF THE TOTAL AMOUNT OF THE BID of the Principal above named, submitted by said Principal to the City of Ukiah, as the case may be, for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made, to the City Clerk to which said bid was submitted, we bind ourselves, our heirs, executors, administrators and successors jointly and severally, firmly by these presents. In no case shall the liability of the surety hereunder exceed the sum of $_____

THE CONDITION OF THIS OBLIGATION IS SUCH,

That whereas the Principal has submitted the above mentioned bid to the City of Ukiah, as aforesaid, for certain construction specifically described as follows, for which bids are to be opened at the Office of the City Clerk, Ukiah Civic Center, Ukiah, California, on April 20, 2023 for THICKENING AND DEWATERING IMPROVEMENTS

NOW, THEREFORE, If the aforesaid Principal is awarded the contract and, within the time and manner required under the specifications, after the prescribed forms are presented to him or her for signatures, enters into a written contract, in the prescribed form, in accordance with the bid and files two bonds with the City of Ukiah, one to guarantee faithful performance and the other to guarantee payment for labor and materials, as required by law, then this obligation shall be null and void; otherwise, it shall be and remain in full force and virtue.

IN WITNESS WHEREOF, we have hereunto set our hands and seals on this _____ day of _____, A.D. 20_____.

_____(Seal)

_____(Seal)

_____(Seal)
Principal

_____(Seal)

_____(Seal)

_____(Seal)
Surety

Address: _____

_____

_____

NON-COLLUSION AFFIDAVIT

Note: Bidder shall execute the affidavit on this page prior to submitting his or her bid.

To City Council, City of Ukiah:

The undersigned in submitting a bid for performing THICKENING AND DEWATERING IMPROVEMENTS by contract, being duly sworn, deposes and says:

that he or she has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with such contract.

_____

_____

_____
Signature(s) of Bidder

Business Address:_____

_____

_____

Place of Residence:_____

_____

_____

NOTARIZATION

Subscribed and sworn to before me this _____ day of _____, 20____.

_____

Notary Public in and for the County of_____, State of California.

My Commission Expires _____, 20 ____.

CITY OF UKIAH
Mendocino County, California

AGREEMENT

FOR

THICKENING AND DEWATERING IMPROVEMENTS
Specification No. 23-02

THIS AGREEMENT, made this _____ day of _____, 20____, by and between the City of Ukiah, Mendocino County, California, hereinafter called the City and _____ hereinafter called the Contractor,

WITNESSETH:

WHEREAS, the City has caused to be prepared in accordance with law, specifications, drawings and other contract documents for the work herein described and shown and has approved and adopted these contract documents, specifications and drawings and has caused to be published in the manner and for the time required by law a notice to bidders inviting sealed proposals for doing the work in accordance with the terms of this contract and

WHEREAS, the Contractor, in response to the notice to bidders, has submitted to the City a sealed proposal accompanied by a proposal guaranty in an amount of not less than 10 percent of the bid price for the construction of the proposed work in accordance with the terms of this contract and

WHEREAS, the City, in the manner prescribed by law, has publicly opened, examined and canvassed the proposals submitted and as a result has determined and declared the Contractor to be the lowest and best regular responsible bidder for the work and for the sums named in the proposal,

NOW, THEREFORE, THIS AGREEMENT WITNESSETH:

Article 1. Work to be Done and Contract Days Allowed.

That the Contractor shall provide all necessary machinery, tools, apparatus and other means of construction; shall furnish all materials, superintendence, overhead, expenses, all labor and expenses of whatever nature necessary for completion of the work in conformity with the Special Provisions and other contract documents hereto attached and according to such instructions as may be given by the Engineer. The Contractor shall complete the work within three hundred and thirty-five (335) calendar days. Contract days shall be counted starting with the 10th day following receipt of notice that the contract has been executed by the City. Contractor, at his or her option, may begin work prior to start of counting contract days, however, in no event shall the Contractor start work without giving notification to the Engineer at least 72 hours prior to the start of work, without obtaining an encroachment permit from the City, or without having submitted certificates of insurance that have been accepted and approved by the Engineer

Article II. Contract Prices.

That the City shall pay the Contractor the prices stated in the proposal submitted by the Contractor, for complete performance of the contract by the Contractor. The Contractor hereby agrees to accept the prices

as full compensation for all material and appliances necessary to the work, for all labor and use of tools and other implements necessary to execute the work contemplated in this contract; for all loss or damage arising out of the nature of the work or from the action of the elements, or from any unforeseen obstructions or difficulties which may be encountered in the prosecution of the work; for all risks of every description connected therewith; for all expenses of the work, as herein specified; for all liability and other insurance, for all overhead and other expenses incident to the work; all according to the Contract Drawings, the Special Provisions, the Details, the instructions and the requirements of the City.

Article III. Labor Discrimination.

Attention is directed to Section 1735 of the Labor Code, which reads as follows:

> "No discrimination shall be made in the employment of persons upon public works because of the race, color, national origin or ancestry, or religion of such persons and every contractor for public works violating this section is subject to all the penalties imposed for a violation of this chapter."

In connection with the performance of work under this contract, the Contractor agrees as follows:

(a) The Contractor will not willfully discriminate against any employee or an applicant for employment because of race, color, religion, ancestry, or national origin. The Contractor will take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, color, religion, ancestry, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the awarding authority setting forth the provisions of this Fair Employment Practice section.

(b) The Contractor will send to each labor union or representative of workers with which he or she has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the awarding authority, advising the said labor union or worker's representative of the Contractor's commitments under this section, to employees and applicants for employment.

(c) The Contractor will permit access to his or her records of employment, employment advertisements, application forms and other pertinent data and records by the Fair Employment Practices Commission, City of Ukiah or any other appropriate agency of the State of California designated by the awarding authority, for the purposes of investigation to ascertain compliance with the Fair Employment Practices section of this contract.

(d) A finding of willful violation of the Fair Employment Practices section of this Contract or of the Fair Employment Practices Act shall be regarded by the awarding authority as a basis for determining the Contractor to be not a "responsible bidder" as to future contracts for which such Contractor may submit bids, for revoking the Contractor's pre-qualification rating, if any and for refusing to establish, reestablish or renew a pre-qualification rating for the Contractor.

The City of Ukiah shall deem a finding of willful receipt of written notice from the Fair Employment Practices Act to have occurred upon that it has investigated and determined that the Contractor has violated the Fair Employment Practices Act and has issued an order under Labor Code Section 1426 or obtained an injunction under Labor Code Section 1429.

Upon receipt of such written notice from the Fair Employment Practices Commission, the City shall notify the Contractor that unless he or she demonstrates to the satisfaction of the awarding authority within a stated period that the violation has been corrected, his or her pre-qualification rating will be revoked at the expiration of such period.

(e) The Contractor agrees that should the City determine that the Contractor has not complied with the Fair Employment Practices section of this Contract, then pursuant to Labor Code Section 1735 and 1775 the Contractor shall, as a penalty to the City, forfeit for each calendar day or portion thereof, for each person who was denied employment as a result of such non-compliance, the penalties provided in the Labor Code for violation of prevailing wage rates. Such monies may be recovered from the Contractor. The City may deduct any such damages from any monies due the Contractor.

(f) Nothing contained in this Fair Employment Practices section shall be construed in any manner of fashion so as to prevent the City or the State of California from pursuing any other remedies that may be available at law.

(g) Prior to awarding the Contract, the Contractor shall certify to the awarding authority that he or she has or will meet the following standards for affirmative compliance, which shall be evaluated in each case by the awarding authority:

(1) The Contractor shall provide evidence, as required by the City that he or she has notified all supervisors, foremen and other personnel officers in writing of the content of the anti-discrimination clause and their responsibilities under it.

(2) The Contractor shall provide evidence, as required by the City, that he or she has notified all sources of employees' referrals (including unions, employment agencies, advertisements, Department of Employment) of the content of the anti-discrimination clause.

(3) The Contractor shall file a basic compliance report, as required by the City. Willfully false statements made in such reports shall be punishable as provided by law. The compliance report shall also spell out the sources of the work force and who has the responsibility for determining whom to hire, or whether or not to hire.

(4) Personally, or through his or her representatives, the Contractor shall, through negotiations with the unions with whom he or she has agreements, attempt to develop an agreement which will:

a. Spell out responsibilities for nondiscrimination in hiring, referral, upgrading and training.

b. Otherwise implement an affirmative anti-discrimination program in terms of the unions' specific areas of skill and geography to the end that qualified minority workers will be available and given and equal opportunity for employment.

(5) The Contractor shall notify the City of opposition to the anti-discrimination clause by individuals, firms or organizations during the period of its pre-qualification.

(h) The Contractor will include the provisions of the foregoing paragraphs 1 through 5 in every first tier subcontract so that such provisions will be binding upon each such subcontractor.

The "Fair Employment Practices Certification" must be completed and signed prior to the time of submitting the bid.

Article IV. Parts of the Contract.

That the complete contract consists of the following documents, all of which shall be considered a part of this agreement.

1. Notice to Bidders
2. Wage Rates
3. General Conditions

4. Technical Specifications
5. Proposal
6. Fair Employment Practices Certification
7. Agreement
8. Contract Bonds
9. Contract Drawings and Construction Details
10. Standard Drawings
11. Indemnification Agreement

IN WITNESS WHEREOF, this contract being executed in duplicate and the parties having caused their names to be signed by authority of their duly authorized office this _____ day of _____, 20____.

CITY OF UKIAH, MENDOCINO COUNTY, CALIFORNIA

By: _____
CITY MANAGER, CITY OF UKIAH

Attest: _____
CITY CLERK, CITY OF UKIAH

By: _____
CONTRACTOR

Attest: _____

Title: _____

The foregoing contract is approved as to form and legality this _____ day of _____, 20 ____.

_____
CITY ATTORNEY, CITY OF UKIAH

INDEMNIFICATION AGREEMENT

This Indemnification Agreement is made and entered in Ukiah, California, on _____, 20___, by and between the City of Ukiah (Ukiah) and _____ (Contractor).

Contractor is

_____

_____ for Ukiah.

As a condition of issuing the work order, attached hereto, Ukiah requires assurance that Contractor will protect Ukiah from damage or damage claims which arise from its performance of the work.

Accordingly, Contractor agrees as follows:

1. **Indemnification**. Contractor shall indemnify and hold harmless Ukiah and its officers, agents, and employees from and against any claim, loss, or damage, including the legal and other costs of defending against any claim of damage or loss which arises out of the Contractor's negligent or wrongful performance under the work order attached hereto, except for claims, losses, or damages resulting from the sole and exclusive negligence or other wrongful conduct of Ukiah or its officers, agents and employees.

CONTRACTOR

BY: _____

TITLE: _____

CITY OF UKIAH
Mendocino County, California

PERFORMANCE BOND

BOND No._____

KNOW ALL PERSONS BY THESE PRESENTS:

THAT WHEREAS, the City of Ukiah, organized and operating under the laws of the State of California, (hereinafter referred to as the "City") has awarded to _____, (hereinafter referred to as the "Contractor") an agreement for Contract No. _____ (hereinafter referred to as the "Project").

WHEREAS, the work to be performed by the Contractor is more particularly set forth in the Contract for the Project dated _____, (hereinafter referred to, together with all attachments and exhibits thereto, as "Contract Documents"), the terms and conditions of which are expressly incorporated herein by reference; and

WHEREAS, the Contractor is required by the Contract Documents to perform the terms thereof and to furnish a bond for the faithful performance of said Contract Documents.

NOW, THEREFORE, we, _____, the undersigned Contractor and _____, as Surety, a corporation organized and duly authorized to transact business under the laws of the State of California, are held firmly bound until the City in the sum of _____ ($_____), for which amount well and truly to be made, we bind ourselves, our heirs ,executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that, if the Contractor, his or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and agreements in the Contract Documents and any alteration thereof made as therein provided, on its part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their intent and meaning; and shall faithfully fulfill all obligations; and shall indemnify and save harmless the City, its officials, officers, employees, and authorized volunteers, as stipulated in said Contract Documents, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

As part of the obligation secured hereby and in addition to the face amount specified therefore, there shall be included costs and reasonable expenses and fees including reasonable attorneys' fees, incurred by the City in enforcing such obligation.

As a condition precedent to the satisfactory completion of the Contract Documents, unless otherwise provided for in the Contract Documents, the above obligation shall hold good for a period of one (1) year after the acceptance of the work by the City, during which time if Contractor shall fail to make full, complete, and satisfactory repair and replacements and totally protect the City from loss or damage resulting from or caused by defective materials or faulty workmanship. The obligations of Surety hereunder shall continue so long as any obligation of Contractor remains. Nothing herein shall limit the City's rights or the Contractor or Surety's obligations under the Contract Documents, law or equity, including, but not limited to, California Code of Civil Procedure Section 337.15.

Whenever Contractor shall be, and is declared by the City to be, in default under the Contract Documents, the Surety shall remedy the default pursuant to the Contract Documents, or shall promptly, at the City's option:

i. Take over and complete the Project in accordance with all terms and conditions in the Contract Documents; or

ii. Obtain a bid or bids for completing the Project in accordance with all terms and conditions in the Contract Documents and upon determination by Surety of the lowest responsive and responsible bidder, arrange for a contract between such bidder, the Surety and the City, and make available as work progresses sufficient funds to pay the cost of completion of the Project, less the balance of the contract price, including other costs and damages for which Surety may be liable. The term "balance of the contract price" as used in this paragraph shall mean the total amount payable to Contractor by the City under the Contract and any modification thereto, less any amount previously paid by the City to the Contractor and any other set offs pursuant to the Contract Documents.

iii. Permit the City to complete the Project in any manner consistent with California law and make available as work progresses sufficient funds to pay the cost of completion of the Project, less the balance of the contract price, including other costs and damages for which Surety may be liable. The term "balance of the contract price" as used in this paragraph shall mean the total amount payable to Contractor by the City under the Contract and any modification thereto, less any amount previously paid by the City to the Contractor and any other set offs by the City pursuant to the Contract Documents.

Surety expressly agrees that the City may reject any contractor or subcontractor which may be proposed by Surety in fulfillment of its obligations in the event of default by the Contractor.

Surety shall not utilize Contractor in completing the Project nor shall Surety accept a bid from Contractor for completion of the Project if the City, when declaring the Contractor in default, notifies Surety of the City's objection to Contractor's further participation in the completion of the Project.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract Documents or to the Project to be performed thereunder shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract Documents or to the Project.

[REMAINDER OF PAGE LEFT INTENTIONALLY BLANK]

IN WITNESS WHEREOF, we have hereunto set our hands and seals this ____ day of _____, 20__.

(Corporate Seal)

_____
Contractor/Principal

By_____

Title_____

(Corporate Seal)

_____
Surety

By_____
Attorney-in-Fact

(Attach Attorney-in Fact Certificate)

Title_____

The rate of premium on this bond is _____ per thousand. The total amount of premium charges is $_____.

(The above must be filled in by corporate attorney.)

THIS IS A REQUIRED FORM.

Any claims under this bond may be addressed to:

(Name and Address of Surety) _____

_____

_____

(Name and Address of Agent or _____

Representative for service of process in _____

California, if different from above) _____

(Telephone number of Surety and Agent _____

or Representative for service of process in California)

CITY OF UKIAH
Mendocino County, California

PAYMENT BOND

BOND No. _____

KNOW ALL PERSONS BY THESE PRESENTS:

WHEREAS, the City of Ukiah ("City") has awarded to _____ ("Contractor/Principal") a contract (City Agreement No. _____, dated _____, _____, referred to as the "Agreement") for the work described as _____. The Agreement is incorporated by this reference into this Payment Bond ("Bond"); and

WHEREAS, Contractor/Principal is required to furnish a bond in connection with the Agreement and pursuant to California Civil Code section 9550;

NOW, THEREFORE, we _____, the undersigned Contractor/Principal, and _____ ("Surety"), a corporation organized and existing under the laws of the State of _____, and duly authorized to transact business under the laws of the State of California, as Surety, are held firmly bound until the City, and to any and all persons, companies, or corporations entitled by law to file stop payment notices under California Civil Code Section 9100, or any person, company, or corporation entitled to make a claim on this bond, in the sum of $_____, for which payment will and truly be made, we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that if Contractor/Principal, its heirs, executors, administrators, successors, or assigns, or subcontractor, shall fail to pay any person or persons named in Civil Code section 9100; or fail to pay for any materials, provisions, or other supplies, used in, upon, for , or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Code, with respect to work or labor thereon of any kind; or shall fail to deduct, withhold, and pay over to the Employment Development Department, any amounts required to be deducted, withheld, and paid over by Unemployment Insurance Code Section 13020 with respect to work and labor thereon of any kind, then Surety will pay for the same, in an amount not exceeding the amount herein above set forth, and in the event suit is brought upon this bond, also will pay such reasonable attorneys' fees as shall be fixed by the court, awarded and taxed as provided in California Civil Code Section 9550, et seq.

It is further stipulated and agreed that the Surety of this bond shall not be exonerated or released from the obligation of the bond by any change, extension of time for performance, addition, alteration or modification in, to, or of any contract, plans, or specifications, or agreement pertaining or relating to any scheme or work of improvement herein above described; or pertaining or relating to the furnishing of labor, materials, or equipment therefor; nor by any change or modification of any terms of payment or extension of time for payment pertaining or relating to any scheme or work of improvement herein above described; nor by any rescissions or attempted rescission of the contract, agreement or bond; nor by any conditions precedent or subsequent in the bond attempting to limit the right of recovery of claimants otherwise entitled to recover under any such contract or agreement or under the bond; nor by any fraud practiced by any person other than the claimant seeking to recover on the bond; and that this bond be construed most strongly against the Surety and in favor of all persons for whose benefit such bond is give; and under no circumstances shall the Surety be released from liability to those for whose benefit such bond has been given, by reason of any breach of contract between the Owner and Contractor/Principal or on the part of any oblige named in such bond; that the sole condition of recovery shall be that the claimant is a person described in California Civil Code section 9100, and who has not been paid the full amount of his or her claim; and that the Surety does hereby waive notice of any such change, extension of time, addition, alteration or modification herein mentioned, including but not limited to the provisions of section 2819 and 2845 of the California Civil Code.

Any notice to Surety may be given in the manner specified in the Agreement and delivered or transmitted to Surety as follows:

Attn:_____

Address:_____

City/State/Zip:_____

Phone:_____

Fax:_____

Email:_____

IN WITNESS WHEREO, two identical counterparts of this Bond, each of which shall for all purposes be deemed an original thereof, have been duly executed by Contractor/Principal and Surety above named, on the __ day of _____, 202__.

_____ (SEAL)
Contractor/Principal

By_____
Contractor's Representative

_____
Contractor/Principal's Address

_____
City, State, Zip

_____(SEAL)
Surety

By_____
Surety's Representative

_____
Surety's Address

_____
City, State, Zip

_____
Telephone Number

NOTE: Signatures of those executing for Surety must be properly acknowledged, the bond must be accompanied by a properly acknowledged Power of Attorney from the Surety authorizing its agent to bind it to this bond. A copy of such Power of Attorney must be in file with the City.

DIRECTIONS FOR PREPARATION OF PERFORMANCE AND MATERIAL AND LABOR BOND

1. Individual sureties, partnerships, or corporations not in the surety business will not be acceptable.
2. The name of the Principal shall be shown exactly as it appears in the Contract.
3. The penal sum shall not be less than required by the Specifications.
4. If the Principals are partners or joint venturers, each member shall execute the bond as an individual and state his place of residence.
5. If the Principal is a corporation, the bond shall be executed under its corporate seal.

   If the corporation has no corporate seal, it shall so state and affix a scroll or adhesive seal following the corporate name.
6. The official character and authority of the person(s) executing the bond for the Principal, if a corporation, shall be certified by the Secretary or Assistant Secretary thereof under the corporate seal, or copies attached to such records of the corporation as will evidence the official character and authority of the officer signing, duly certified by the Secretary or Assistant Secretary, under the corporate seal, to be true copies.
7. The current power-of-attorney of the person signing for the surety company must be attached to the bond.
8. The date of the bond must not be prior to the date of the Contract.
9. The following information must be placed on the bond by the surety company:
   a. The rate of premium in dollars per thousand; and
   b. The total dollar amount of premium charged.
10. The signature of a witness shall appear in the appropriate place attending to the signature of each party of the bond.
11. Type or print the name underneath each signature appearing on the bond.
12. An executed copy of the bond must be attached to each copy of the Contract (original counterpart) intended for signing.

CITY OF UKIAH
Mendocino County, California

DEFECTIVE MATERIAL AND WORKMANSHIP (MAINTENANCE) BOND

KNOW ALL MEN BY THESE PRESENTS,

That we, _____

_____, as **PRINCIPAL**

and_____

_____, as **SURETY**,

are held and firmly bound unto the **City of Ukiah** as Obligee, in the penal sum of

_____

_____($_____),
(5 PERCENT OF THE FINAL CONTRACT AMOUNT)

to which payment well and truly to be made, we do bind ourselves, our and each of our heirs, executors, administrators' successors and assigns jointly and severally, firmly by these presents.

WHEREAS, the said Principal entered into a Contract with the City of Ukiah dated_____
for

_____

_____

WHEREAS, said Contract has been completed, and was approved on the _____ day of _____,
_____,

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal shall guarantee that the work will be free of any defective materials or workmanship which become apparent during the period of one (1) year following completion of the Contract, then this obligation shall be void, otherwise to remain in full force and effect, provided however, any additional warranty or guarantee whether expressed or implied is extended by the Principal or Manufacturer only, and the surety assumes no liability for such a guarantee.

Signed, sealed, and dated this _____ day of _____, 20_____.

_____(Seal)

BY:_____(Seal)

_____(Seal)
Principal

_____(Seal)

BY:_____(Seal)

_____(Seal)
Surety

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SECTION 01110

SUMMARY OF WORK

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. General description of the Project and the Work to be performed by the Contractor.

1.02 WORK COVERED BY CONTRACT

A. The Work covered under this Contract will be performed at the site of the City of Ukiah's Water Pollution Control Facility, (300 Plant Road, Ukiah, CA 95482 The project location is indicated on the Drawings.

B. The Work to be performed by the Contractor generally includes:

1. Furnishing all labor, superintendence, materials, power, water, tools, equipment and services required by the Contract Documents or required to complete the Work.

2. Coordinate work of all trades.

3. Furnishing and installing miscellaneous items incidental to or necessary for completion of the Work, whether these items are specifically indicated in the Contract Documents or not.

C. The Work consists of the construction of the following items:

1. Demolition of existing equipment, piping and valves, concrete and various other items in the DAFT and Dewatering areas as shown on the drawings

2. Assembly and installation of a Suspended Air Flotation (SAF) System that was pre-purchased by the Owner

3. Furnishing and installing a container structure to house the Suspended Air Flotation Feed System

4. Furnishing and installation of two Polymer Systems in the existing DAFT Building

5. Installation of 8-inch diameter piping from the Plant Drain Pump Station to a connection point with the 8-inch Washwater Piping

6. Furnishing and installation of variable speed drives for the existing Washwater Pumps and Primary Scum Pumps

7. Assembly and installation of a Screw Press Dewatering and Polymer Blending System that was pre-purchased by the Owner

8. Construction of a concrete containment area for dewatered sludge cake

9. Furnishing and installing all mechanical, structural, electrical and instrumentation and controls associated with above items and as shown on the drawings

D. Owner-Furnished Equipment:

1. Owner will furnish the following products to Contractor for installation:

a. Heron SAF Flocculation Tubes and Clearmixer (As shown in Appendix A)

b. FKC Screw Press (As shown in Appendix B)

2. Work under this Contract includes all provisions necessary to fully incorporate Owner-furnished products, including piping, fasteners, supports, conduit and

conductors, coatings and other provisions necessary for a complete and operational installation.

1.03 OTHER CONTRACTS

A. The Owner will be undertaking other projects including the Phase 4 Recycled Water Project at the plant site simultaneously with the Work to be completed under this project. Coordination with the contractors undertaking related work or un-related work within the plant is the responsibility of the Contractor.

1.04 SPECIFICATION LANGUAGE

A. Specifications may be written in the imperative mood in streamlined form in accordance with practices and principals of the Construction Specifications Institute.

B. Imperative language is directed to the Contractor unless specifically noted otherwise.

C. The words “shall be” are included by inference where a colon (:) is used within sentences or phrases.

1.05 REGULATORY REQUIREMENTS

A. Comply with all Federal, State, and local laws, regulations, codes, and ordinance applicable to the work.

B. References in the Contract Documents to local codes shall mean those of the City of Ukiah.

C. Other standards and codes that apply to the work are designated in the Specifications.

1.06 ACCESS BY GOVERNMENT OFFICIALS

A. Authorized representatives of governmental agencies shall have access to the work area at all times. Provide proper facilities for access and inspection.

1.07 PROTECTION OF PUBLIC AND PRIVATE PROPERTY

A. Construction will encounter numerous existing features of various types, such as curbs, asphalt pavement, utility poles, guy wires and other surface structures. Contractor shall protect existing features of this nature and all features affected by construction operations shall be restored to their original condition.

B. To the greatest extent possible, remove existing features without damaging the materials and re-use the material to place back in the original condition. When existing features are damaged during removal, install new materials of similar type, appearance and function, at no additional cost to the Owner.

C. Contractor shall be responsible for all damage to streets, roads, driveways, highways, shoulders, ditches, embankments, culverts, bridges, and other public or private property, regardless of location or character, that may be caused by transporting equipment, materials, or workers to or from the work or any part or site thereof, whether by Contractor or Contractor’s subcontractors or suppliers.

D. Keep fire hydrants and water control valves free from obstruction and available for use at all times.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01140

WORK SEQUENCE AND CONSTRAINTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Schedule requirements, construction constraints, and a suggested Work sequence for specific elements of the Project.

1.02 REFERENCED SECTIONS

A. The following Section is reference in this Section

1. Section 01999 – Reference Forms

1.03 GENERAL SEQUENCING REQUIREMENTS

A. The sequencing requirements and construction constraints described are critical elements of the Work and are presented to underscore the importance of proper management, planning, scheduling, coordination, and execution of the Work.

B. Sequencing requirements and construction constraints have been defined in this Section for only certain structures, facilities, and elements of the Work. All work, whether or not addressed in this Section, shall be governed by applicable specified requirements. If additional shutdown constraints are necessary to allow implementation of Contractor's construction procedures and schedule, the Engineer will establish such constraints.

C. Contractor's Construction Schedule:

1. Clearly illustrate the proposed sequence of construction.

2. Conform to the sequencing requirements and limitations specified in this Section.

3. Modify or adapt the suggested sequencing as necessary to complete the project provided all environmental and service continuity requirements are met.

1.04 OPERATIONAL CONTINUITY

A. The City of Ukiah owns and operates wastewater collection and treatment facilities. The Work under this project will interface with these existing facilities.

B. The existing wastewater collection system and treatment plant continuously receives, conveys and treats wastewater. Do not interrupt functions necessary to maintain operation of these facilities except as approved by the Engineer through review of the Contractor's Facility Outage Plan and as specified herein.

C. Coordinate the Work to minimize interference and interruption of the normal operation of the Owner's existing facilities through proper planning and by making temporary connections.

D. Except for allowable out-of-service periods as specified, maintain operation of sanitary and storm sewers, service laterals, catch basins, manholes, and similar facilities.

1. Provide temporary pumps, piping, power, bulkheads, plugs, and other devices that are required to keep such facilities in operation when these must be temporarily taken out of service in order to conduct the Work.

2. Notify the Engineer in writing 3 days in advance of the time it is necessary to take utilities out of service.

3. Notify public agencies and utility companies when service to customers will be temporarily interrupted to perform the Work and coordinate shutdowns with these agencies.

1.05 PERMIT VIOLATIONS

A. The wastewater treatment facilities must continuously comply with the Owner's National Pollutant Discharge Elimination System (NPDES) permit and Mutual Agreement and Order (MAO) requirements.

B. Construction of the Work under this Contract must be undertaken in compliance with the terms and conditions of various permits that the Owner has obtained for this project.

C. In the event NPDES permit [or MAO] violations or spills are caused or, in the Owner's opinion, will be caused by the Contractor's operations, the Owner shall be entitled to immediately employ others to stop the violations or potential spills without giving written notice to the Contractor. All costs incurred by the Owner to stop or prevent permit violations shall be paid by the Contractor.

D. Under no circumstances shall wastewater be discharged, bypassed or spilled to creeks, drainage ditches, or other waterways; storm drain systems; or the ground surface. In the event accidental discharge or bypassing is caused by the Contractor's operations, the Owner shall immediately be entitled to employ others to stop the bypassing without giving written notice to the Contractor. All costs incurred by the Owner to stop or prevent the bypass shall be paid by the Contractor.

E. Penalties imposed on and costs incurred by the Owner as a result of violations caused by the actions of the Contractor, his employees, or subcontractors, shall be borne in full by the Contractor, including legal fees and other expenses to the Owner resulting directly or indirectly from Contractor's actions.

1. Under the terms of the NPDES permit issued to the Owner, the Owner is liable for the following penalties:

a. NPDES Permit No. R1-2018-0035 - $10,000 per day for each violation

1.06 ACCESS

A. The existing facility where Contractor's work is to be done will be occupied by the Owner throughout the construction period. Access to the site by the Owner's personnel is required for daily operations, maintenance, and administration. Additionally, regular traffic into and out of the site is to be expected.

B. Contractor shall provide all necessary access to the Owner's personnel as required to safely and efficiently operate/maintain the facilities. At all times during the Contract duration, the Contractor is to provide the Owner's personnel and representatives safe and immediate access to all process control equipment.

C. Contractor shall provide for unimpeded access for all delivery vehicles transporting materials, chemicals and equipment to the facility for the Owner's operations. Contractor shall coordinate the work to avoid interference with vehicular access to the existing plant site and normal operation of plant equipment and processes.

1.07 FACILITY OUTAGE PLAN

A. Prepare and submit a detailed Facility Outage Plan when removal of an existing facility from service is necessary to complete the Work.

B. Submit the Facility Outage Plan to the Engineer for review and approval at least 2 weeks prior to the scheduled outage. Develop the Facility Outage Plan to satisfy the Work Sequence restrictions and conditions specified in this Section. Do not proceed with any Work involving facility outages until the Outage Plan has been approved by the Engineer.

C. The Facility Outage Plan shall describe, as applicable, a listing of existing facilities that will be taken out of service, methods for preventing bypassing of other treatment units, the length of time required to complete the operation, and the necessary personnel and equipment which will be provided in order to successfully complete the operation.

D. A System Outage Request (SOR) form shall accompany each outage or bypass plan (See Section 01999). Coordinate the outage schedule with the overall construction schedule.

1.08 REMOVING EXISTING FACILITIES FROM SERVICE

A. Existing systems or individual equipment items shall be isolated, decommissioned, de-energized, or depressurized only by the Owner's operations personnel. This work will be done in accordance with the Facility Outage Plan and schedule prepared by the Contractor.

B. The Contractor shall design and provide all necessary bulkheads, cofferdams, and support structures to allow isolation of work areas from tanks, pipes, and/or channels that are in service. Bulkheads, cofferdams, and support structures shall conform to applicable OSHA requirements.

C. The Contractor shall provide all necessary temporary pumps, piping, power, electrical wiring, controls, and labor during and subsequent to all shutdown activities as required. Maintain adequate access to the plant facilities, utilities, and equipment during construction to allow continued operation and maintenance by Owner's personnel to take place.

D. Prior to any shutdown or flow diversion, all materials, bypass pumps, fittings, supports, equipment and tools shall be on the site and all necessary skilled labor scheduled prior to starting any connection work.

E. If valves or gates need to be opened or closed, or mechanical equipment turned off or turned on, or similar operations performed to allow construction to proceed, this is to be performed by the Owner's operations staff working in coordination with Contractor personnel. Valves and gates that may be used to isolate lines and facilities may not completely seal. Contractor shall allow for leakage in planning the Work. Contractor shall clean the work areas as required to perform the work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 WORK COORDINATION

A. Schedule and coordinate the overall Work and construction operations, including the work of subcontractors and the timely provision of products and supplies.

B. Perform Work in an orderly and logical sequence. Individual specification Sections may identify specific requirements that are related to Work sequence. These types of constraints are not repeated in this Section but shall be followed by the Contractor.

3.02 WORK CONSTRAINTS

A. Work Hours

1. Except as otherwise required for the safety or protection of persons and except as otherwise stated in the Contract Documents, Work may only be performed Monday through Friday during the hours of 7:00 am and 6:00 pm. Contractor will not perform Work on a Sunday or any legal holiday defined by the City of Ukiah without written consent from the Owner.

2. Legal holidays are defined as:

a. New Year's Day on January 1.

b. Memorial Day on the last Monday in May.

c. Independence Day on July 4.

d. Labor Day on the first Monday in September.

e. Thanksgiving Day on the fourth Thursday in November.

f. Christmas Day on December 25.

g. When a holiday falls on Sunday, the following Monday is recognized as the legal holiday. When a holiday falls on a Saturday, the preceding Friday is recognized as the legal holiday.

B. Contractor shall undertake the Work in compliance with the constraints defined in the following paragraphs:

1. The Owner's ability to operate the treatment plant shall be maintained at all times, except as authorized in writing in accordance with a Facility Outage Plan and accompanying SOR.

2. The new 8-inch WW piping to the Plant Drain Pump Station must be installed before work on the DAFTs can begin.

3. At least one DAFT must always remain in operation. Work shall begin on DAFT 2 first. The second DAFT unit cannot be taken out of service until the SAF system for one DAFT is operational and accepted.

4. The temporary sludge dewatering system must be operational before the existing belt filter press can be demolished and the new screw press installed.

5. The Digester have a maximum of three days of storage.

6. The temporary sludge dewatering system must operate successfully for two days before demolition work on the existing belt filter press can began.

7. Continuous operation of the temporary dewatering system shall not begin on after 1:00 pm on a Thursday or a Friday, Saturday or Sunday.

8. Work in the DAFT and Dewatering areas can occur in parallel.

3.03 SUGGESTED WORK SEQUENCE

A. The following work sequence is one suggested means of constructing the project, and shall be followed in general unless another suitable method of completing the work is developed by the Contractor and approved by the Owner. This suggested work sequence is general in nature and does not include all work activities required by this Contract for completion of the work. The suggested work sequence shall be coordinated with the requirements of other specification Sections and the Drawings in order to complete the Work in a timely and satisfactory manner.

B. Suggested Work Sequence

1. Install SAF unit for DAFT 2

a. Install the new 8-inch WW piping to the Plant Drain System.

b. Cap existing PSC pipe at grade to prevent flow to DAFT 2. Close valves to prevent Polymer, MS and WW flow to DAFT 2. Demolish saturation tank, air supply and nitrogen purge system for DAFT 2 and cap AFE and SA lines at grade. Cap PF line at DAFT 2 connection above grade.

c. Demolish concrete slab above piping for DAFT 2 to the extent that the 8'x24' container will fit as shown on 70-M-001. Keep DAFT 1 piping in service.

d. Connect from the existing PSC line to the new PSC pipe that feeds DAFT 2. When DAFT 1 is taken out of service later, temporary piping can be placed while proposed piping is constructed.

e. Connect from the existing POL line to the new POL pipe that feeds DAFT 2. When DAFT 1 is taken out of service later, temporary piping can be placed while proposed piping is constructed.

f. Construct new WW, MS, Polymer, and PSC lines for DAFT 2 and connect to existing with one two (2) hour shut down per pipe. PSC piping will require a temporary connection to the existing PSC piping to DAFT 1. All valving to remain closed.

g. Demolish remaining WW, MS and Polymer lines above grade and cap below grade.

h. Pour new concrete foundation next to the DAFT 2 structure.

i. Install above ground equipment and piping including the SAF, Clearmixer, WW, MS, POL, and PSC lines.

j. Place the 8'x24' Container with the frothing generation equipment and run froth piping upstream of the Clearmixer.

k. In the equipment building, remove the existing polymer system servicing DAFT 2 as shown on 70-D-006. Install the new polymer blending system to provide polymer to the new SAF unit.

l. Perform all testing required by manufacturer of SAF system. Once seven consecutive days of successful testing has been performed and approved, the SAF system for DAFT 2 shall be placed into operation.

2. Install SAF for DAFT 1

a. Close valves to prevent PSC, Polymer, MS and WW flow to DAFT 1. Demolish saturation tank, air supply and nitrogen purge system for DAFT 1 and cap AFE and SA lines at grade. Cap PF line at DAFT 1 connection above grade.

b. Demolish concrete slab above piping for DAFT 1.

c. Construct new WW, MS, POL, PSC and Drain lines and connect to existing with one two (2) hour shut down per pipe. Connect PSC and POL line to DAFT 2, and remove temporary piping. All valving to remain closed.

d. Demolish remaining WW, MS and Polymer lines above grade and cap below grade.

e. Pour new concrete foundation.

f. Install above ground equipment and piping including the SAF, Clearmixer, WW, MS, Polymer, and PSC lines.

g. In the equipment building, remove the existing polymer system servicing DAFT 1 as shown on 70-D-006. Install the new polymer blending system to provide polymer to the new SAF unit.

h. Perform all testing required by manufacturer of SAF system. Once seven consecutive days of successful testing has been performed and approved, the SAF system for DAFT 1 shall be placed into operation.

i. Demolish remaining equipment in the DAFT area and equipment building, keep saturation pumps in service until the SAF system is accepted.

3. Install Screw Press in Dewatering Building

a. Set up a temporary dewatering site as shown on C001 and 75-D-001.

b. Demolish existing Belt Filter Press.

c. Demolish existing polymer system. Keep the existing polymer tote stand to support one the new tote.

d. Construct Screw Press concrete pedestals and grating as shown on 75-S-002.

e. Install new Screw Press and polymer system.

f. Construct the dewatered solids containment wall as shown on 75-S-001.

g. Perform all testing required by manufacturer of Screw Press system. Once seven consecutive days of successful testing has been performed and approved, the Screw Press shall be placed into operation.

h. Decommission and remove the temporary dewatering equipment.

END OF SECTION

SECTION 01200

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Methods of measurement and payment for specific items of Work under this Contract. Refer also to General Conditions for administrative aspects of payments by the Owner to the Contractor.

1.02 BID COMPONENTS AND PAYMENT

A. General

1. All Bid Items identified on the Bid Form will be “Lump Sum Work”. Contractor’s cost for “Lump Sum Work” shall cover all Work indicated by the Contract Documents. Lump Sum Work will be paid for on a progress payment basis in accordance with the provisions of the General Conditions.

B. Summary

1. The Bid Amounts for each Bid Item will be used for comparative bid analysis. The Bid amounts will also form the basis of monthly progress payments. Each Lump Sum bid amount will undergo further breakdown as described later in this section. Bid Item 2, WORKER PROTECTION AND SAFETY/SHORING, will also demonstrate the Contractor's compliance with the California Labor Code relating to the price for sheeting, shoring, and bracing of excavations. Bid items are not intended to be exclusive descriptions of work categories and the Contractor shall determine and include in its pricing all materials, labor, and equipment necessary to complete each Bid Item (work phase) as shown and specified.

C. Base Bid Item No. 1, Mobilization/Demobilization.

1. The lump sum bid for mobilization shall not exceed four percent (4%) of the total bid price. Mobilization shall include: the obtaining of insurance and bonds; moving onto the site of all equipment; submittal and approval of initial project schedule; obtaining and paying for all permits by other agencies as applicable; furnishing temporary construction utilities (temporary power, toilets, water, fences, etc.); installing construction signs; temporary buildings and field office trailer(s); and other construction all as required for the proper performance and completion of the work.

2. The lump sum bid for demobilization shall not be less than two percent (2%) of the total bid price. Demobilization shall include site cleaning and restoration of surfaces within the job site, post-construction meeting, removal of all temporary facilities and equipment from the work area, disconnection of the temporary construction utilities and turnover of project to the Owner.

3. In the event the Contractor writes in a Mobilization/Demobilization price greater than six percent (6%) on the Bid Schedule found in the BID FORM, the Owner will pay any excess with the final Progress Payment.

4. Contractor may apply for payment of mobilization on a percent complete basis as the items covered in the Mobilization are being completed.

5. Contractor may apply for payment of demobilization after the overall project substantial completion is achieved and the project begins to demobilize.

6. The lump sum price shall be full compensation for the preparation and installation or submittal of these materials, and for all labor, equipment, tools and incidentals to complete this item.

D. Base Bid Item No. 2, Workers Protection and Safety/Shoring.

1. The lump sum amount for providing a detailed plan of worker safety and maintaining safety during construction, including conforming to the California Labor Code all applicable safety orders and permits. Contractor may apply for payment for this Bid Item on a percent complete basis as the items covered in Worker Protection and Safety/Shoring are being completed.

2. The lump sum price shall be full compensation for the preparation and installation or submittal of these materials, and for all labor, equipment, tools and incidentals to complete this item.

E. Base Bid Item No. 3, All Work at the Ukiah WWTP Site in Accordance with the Contract Documents for the SAF System (Area 70), with the Exception of Work Included Under Bid Items 1, 2, 4, 5, 6, 7, and 8.

1. The lump sum amount for providing the total cost to complete all work at the Ukiah WWTP site for the SAF and Polymer Blending systems (Area 70) in accordance with the contract documents including civil/site work, 8-inch WW piping to the Plant Drain Pump Station, SAF Frothing Equipment container, demolition work, concrete work, piping and valving, light poles and all associated mechanical, electrical and instrumentation and control work.

2. The SAF equipment as shown in Appendix A is Owner provided and the Contractor shall assemble and install the equipment.

3. The lump sum price shall be full compensation for the preparation and installation or submittal of these materials, and for all labor, equipment, tools and incidentals to complete this item.

F. Base Bid Item No. 4, All Work at the Ukiah WWTP Site in Accordance with the Contract Documents for the Dewatering System (Area 75), with the Exception of Work Included Under Bid Items 1, 2, 3, 5, 6 7, and 8.

1. The lump sum amount for providing the total cost to complete all work at the Ukiah WWTP site for the Dewatering and Polymer Blending Systems (Area 75) in accordance with the contract documents including civil/site work, dewatered storage containment wall, piping and valving, demolition work, concrete work, and all associated mechanical, electrical and instrumentation and control work.

2. The Dewatering and Polymer Blending System as shown in Appendix B are Owner provide and the Contractor shall assemble and install the equipment.

3. The lump sum price shall be full compensation for the preparation and installation or submittal of these materials, and for all labor, equipment, tools and incidentals to complete this item.

G. Base Bid Item No. 5, All Work at the Ukiah WWTP Site in Accordance with the Contract Documents for providing the operational cost for Temporary Dewatering Biosolids, with the Exception of Work Included Under Bid Items 1, 2, 3. 4, 6, 7 and 8.

1. The unit price per dry ton is the amount for dewatering biosolids and loading the dewatered biosolids into the City's truck for disposal by the City in accordance with the contract documents. The unit price per dry ton shall include all labor, materials, equipment, chemical costs, operational costs and environmental permitting and monitoring necessary to legally extract, dewater, and load dewatered biosolids into a City truck.

2. The unit price shall be full compensation for the preparation and installation or submittal of these materials, and for all labor, equipment, tools, temporary power, chemicals including polymer, containment, and incidentals to complete this item.

3. The bid item quantity for this bid item may vary from 0% to 200% of the estimated quantity of 100 dry tons without affecting the unit bid price. The quantity of dry tons will be measured by the City by taking at a minimum four representing samples to be composited into one sample per truck load and measuring percent dry solids.

H. Base Bid Item No. 6, All Work at the Ukiah WWTP Site in Accordance with the Contract Documents for the furnishing and installing of VFDs for the Washwater Pumps (Area 12), with the Exception of Work Included Under Bid Items 1, 2, 3, 4, 5, 7, and 8.

1. The lump sum amount for providing the total cost to complete all work at the Ukiah WWTP site for the furnishing and installing of VFDs for the Washwater Pumps (Area 12) in accordance with the contract documents including VFDs, ductbanks, conduit and wiring, civil/site work, and all associated electrical and instrumentation and control work.

2. The lump sum price shall be full compensation for the preparation and installation or submittal of these materials, and for all labor, equipment, tools and incidentals to complete this item.

I. Base Bid Item No. 7, All Work at the Ukiah WWTP Site in Accordance with the Contract Documents for the furnishing and installing of VFDs for the Primary Scum Pumps (Area 31), with the Exception of Work Included Under Bid Items 1, 2, 3, 4, 5, 6 and 8.

1. The lump sum amount for providing the total cost to complete all work at the Ukiah WWTP site for the furnishing and installing of VFDs for the Primary Scum Pumps (Area 31) in accordance with the contract documents including VFDs, ductbanks, conduit and wiring, civil/site work, and all associated electrical and instrumentation and control work.

2. The lump sum price shall be full compensation for the preparation and installation or submittal of these materials, and for all labor, equipment, tools and incidentals to complete this item.

J. Base Bid Item No. 8, All Work at the Ukiah WWTP Site in Accordance with the Contract Documents for mobilization and demobilization of the Temporary Dewatering System in Bid Item 5, with the Exception of Work Included Under Bid Items 1, 2, 3. 4, 5, 6 and 7.

1. The lump sum amount for providing the total cost to complete all work at the Ukiah WWTP site for the mobilization and demobilization of the temporary dewatering system (Bid Item 5) in accordance with the contract documents. The lump sum price shall include all labor, materials, equipment and environmental permitting and monitoring necessary to install and remove the dewatering equipment from the site.

2. The lump sum price shall be full compensation for the preparation and installation and removal or submittal of these materials, and for all labor, equipment, tools, incidentals to complete this item.

1.03 SCHEDULE OF VALUES

A. Format: Identify each line item in the Schedule of Values with number and title of the major Specification sections. Submit typed schedule on 8½ x 11-inch paper; Contractor's standard form or media-driven printout will be considered on request.

B. At the pre-construction meeting, submit a preliminary Schedule of Values to the Owner’s Representative for review. The Contractor shall incorporate any review comments from the Owner’s Representative, and submit a final Schedule of Values at least 21 days prior to submitting the first Application for Payment.

C. The Schedule of Values shall assign a fair, reasonable and equitable dollar value for each activity on the Contractor's construction schedule. The Schedule of Values shall include anticipated progress payments for each item in the bid schedule through the final payment. In addition, a detailed breakdown of lump sum prices shall be included in the Schedule of Values.

D. The Schedule of Values shall specifically indicate installed cost for materials and equipment for each bid and sub-bid item.

E. Each activity's assigned value shall consist of labor, equipment and materials cost and a prorata contribution to overhead and profit. Breakdown shall be so organized as to facilitate assessment of work and payment of subcontractors.

F. The sum of the assigned values shall equal the lump sum price of the activity.

G. If, in the opinion of the Owner’s Representative or Owner, the Schedule of Values is not balanced, the Contractor shall provide documentation substantiating the cost allocations of those activities believed to be unbalanced. Cost allocation will be considered unbalanced if an activity on the construction schedule has been assigned a disproportionate allocation of labor, direct, or overhead and profit costs which result in progress payment request(s) which would create a condition where insufficient funds are available to complete the unfinished work. Upon request by Owner, support values shall be given with data that will substantiate their accuracy. Upon Owner's request, the Contractor shall submit additional detailed cost information.

H. Upon acceptance of the Schedule of Values, it shall be used as a basis for processing all progress payment requests.

1.04 PROGRESS PAYMENT REQUESTS

A. Submit Progress Payment Requests during the course of the project in conformance with the General Condition.

B. Submittal of progress record drawings of the project will be required at 25%, 50%, 75%, and substantial completion of the project. These submittals shall accompany the progress payment request and will be a condition of processing payment requests.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01310

PROJECT MEETINGS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Requirements for calling for and conducting meetings for the Work.

1.02 REFERENCED SECTIONS

A. The following Section is referenced in this Section

1. Section 01320 – Construction Schedule

1.03 GENERAL

A. Project meetings and conferences are an important administration and communication requirement of all project participants. Meetings will be conducted throughout the course of the construction to address issues related to the Work, review and coordinate progress of the Work, and to discuss other matters of common interest to project participants.

B. Meeting and conference locations and qualified participants will be determined by the Engineer and the Contractor based on the meeting agenda topics.

1.04 PRECONSTRUCTION CONFERENCE

A. Prior to the start of construction, the Engineer will schedule a meeting of the Contractor, Owner, and their respective representatives. The general purpose of the meeting will be to establish working relationships, begin coordination of construction matters, discuss the Work, and to review the pertinent features of the Contract. The duration of the preconstruction conference will take approximately 4 hours.

B. The agenda for the meeting will cover at least the following items, a more detailed agenda will be distributed at the meeting:

1. Organization of the Contractor's forces and personnel, including subcontractors and materials suppliers.

2. Lines of authority and channels and procedures for communication.

3. Contractor’s construction schedule, including sequence of critical work.

4. Processing of shop drawings and other data that will be submitted to Owner for review.

5. Processing of change order requests and monthly applications for payment.

6. Procedures for quality control, housekeeping and related matters.

C. Contractor should be prepared to discuss the following topics:

1. Preliminary construction schedule and critical path.

2. Schedule of submittals and submittals needing short turn-around times.

3. Schedule of Values for construction payments.

4. Critical work sequencing.

5. Plans for mobilization, arrangement and use of staging and storage areas, use of site, location and arrangement of field offices, and site security.

D. Minutes of Meeting

1. The Engineer will compile minutes of the meeting and distribute copies to all participants.

1.05 PROGRESS MEETINGS

A. Unless otherwise arranged, there will be a weekly progress meeting at a time and at an on-site location that is mutually agreed upon between the Contractor, Engineer and Owner.

1. Meetings are to enable orderly project review during the progress of work.

2. Engineer, Owner, Contractor's Superintendent, representatives of subcontractors, suppliers' representatives as may be needed, other Contractors working at the site, and other parties shall attend these meetings.

3. Engineer will preside over the meeting and will compile and distribute minutes of the meeting.

B. The purpose of the weekly meetings is to coordinate the efforts of all concerned to result in smooth and coordinated progress towards completion of the overall project.

C. Contractor shall bring to each weekly meeting the updated 3-week "look ahead" schedule.

D. The Contractor will be required to address the following items at the weekly meeting:

1. Work completed last week.

2. Work anticipated next week.

3. Log of submittals and Requests for Information.

4. Contract document deficiencies or questions noted during prior week.

5. Schedule status and corrective measures and procedures that are planned to place the project back on schedule, if such action is necessary.

6. Report of any accidents, and any site safety issues that need to be addressed.

E. Other agenda items to be discussed include:

1. Review and revise as necessary and approve minutes of previous meetings.

2. Status of Requests for Information, Change Order Requests, submittals and shop drawings.

3. Identify problems that impede planned progress.

4. Other current business pertaining to the Work.

F. Revision of Minutes

1. Unless published minutes are challenged in writing prior to the next regularly scheduled progress meeting, they will be accepted as properly stating the activities and decisions of the meeting.

2. Persons challenging published minutes shall reproduce and distribute copies of the challenge to all indicated recipients of the particular set of minutes.

3. Challenge to minutes shall be settled as priority item of "old business" at the next regularly scheduled meeting.

1.06 PROGRESS SCHEDULE AND PROGRESS BILLING MEETINGS

A. Once each month, a progress schedule and progress payment meeting will be conducted with the Engineer. The purpose of this meeting is to review the Progress Payment Estimate and reach agreement on the extent of the Work completed during the pay period.

B. The meeting date will be scheduled in accordance with the Owner's deadline for submittal of Progress Pay Estimate.

C. The updated progress schedule will also be reviewed at this meeting as described in Section 01320. Schedule impacts, time extension requests, actual and anticipated schedule activity sequence/duration changes, delays, and other schedule-related topics will be discussed.

D. The Engineer may require more frequent progress schedule meetings should there be schedule revisions that necessitate such a meeting.

1.07 SUBMITTAL MEETINGS

A. When required in the individual technical specification, or if requested by the Contractor or the Engineer, a meeting regarding a required submittal will be held to facilitate the timeliness of the submittal preparation and review process.

1.08 QUALITY ASSURANCE MEETINGS

A. The Contractor or the Engineer may request a meeting prior to the start of a particular phase of the project to discuss how the Work shall be accomplished in accordance with the quality requirements of the Contract Documents, Codes, permits and industry standards. Quality assurance inspections and tests that are applicable to the Work will be discussed.

1.09 PRE-INSTALLATION MEETINGS

A. When required in the individual specification, or if requested by the Contractor or Engineer, a pre-installation meeting will be held to review conditions of the installation, installation procedures, and coordination with related work. This meeting will be scheduled to take place in advance of installation of the equipment or as required in the technical specifications.

1.10 PRE-SUBSTANTIAL COMPLETION MEETING

A. Thirty (30) days prior to the estimated substantial completion, the Owner, Engineer, Contractor, and appropriate subcontractors will meet to review maintenance manuals, guarantees, closeout submittals, bonds, and service contracts for materials and equipment.

1.11 SPECIAL MEETINGS

A. Any time during progress of the Work, the Owner and the Construction Manager shall have the authority to require the Contractor and any subcontractor, suppliers, or service providers to attend job-site conferences on matters which require immediate or special attention. Any notice of such conference shall be duly observed and complied with by the Contractor and subcontractors, suppliers, or service providers without extra cost to Owner.

1.12 POST CONSTRUCTION GUARANTY PERIOD MEETING

A. Contractor shall meet with a representative of the Owner and the Engineer approximately eleven (11) months after the date of Substantial Completion to inspect the Work. Meeting will be arranged by the Owner at least seven (7) days before meeting. The Contractor will require attendance of its Project Manager/Superintendent, appropriate manufactures and appropriate subcontractors.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01320

CONSTRUCTION SCHEDULE

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Procedures for preparing and revising the construction schedule used for planning and managing construction activities.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. General Conditions

1.03 COORDINATION WITH GENERAL CONDITIONS

A. Prepare and submit a Preliminary Schedule in accordance with the requirements of General Conditions.

B. The Contractor's execution of the Work shall begin based on the Preliminary Schedule accepted by the Engineer. As Work progresses, the Schedule shall be updated and resubmitted in accordance with the requirements of this Section.

1.04 USE OF SCHEDULE

A. The schedule and subsequent updates provide a basis for determining the progress status of the project relative to the completion time, specific dates, and for determining the acceptability of the Contractor's progress payment estimates.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 DESCRIPTION

A. The Contractor shall prepare a time scale network schedule using a critical path method. A general guide for preparing such a schedule is contained in "The Use of CPM in Construction, a Manual for Contractors," published by the Associated General Contractors of America.

B. The schedule shall depict all significant construction activities and all items of work listed in the breakdown of contract prices submitted by the Contractor in accordance with the General Conditions.

1. Indicate assigned values for each part of the work.

2. Indicate dependencies between activities to establish the effect the progress of any one activity has on the schedule.

C. Completion time shall be shown on the schedule. Activities making up the critical path shall be identified.

D. No activity on the schedule shall have a duration longer than 21 days or assigned value greater than $50,000, except activities comprising only fabrication and delivery, which may extend for more than 21 days.

1. Activities that exceed these limits shall be divided into more detailed components.

2. The scheduled duration of each activity shall be based on the work being performed during the normal 40-hour workweek with allowances made for legal holidays and normal weather conditions.

3.02 SUBMITTAL PROCEDURES

A. Submit Preliminary Schedule in accordance with the General Conditions.

B. Submit the following items:

1. Two copies of the project schedule formatted to fit 11x17 inch sheets.

2. Electronic file of the schedule.

C. The Engineer will review the Preliminary Schedule to ascertain compliance with specified project constraints, compliance with milestone dates, reasonableness of durations and sequence, accurate inter-relationships and completeness.

D. Review comments will be transmitted to Contractor following completion of preliminary review.

E. Revise and resubmit schedule in accordance with written comments, or request joint meeting to resolve objections.

F. When schedule reflects the Engineer and Contractor's agreement of project approach and sequence, schedule will be accepted as the Base Schedule. Use the accepted Base Schedule for planning, organizing and directing the work and for reporting progress.

3.03 UPDATING THE SCHEDULE

A. Submit an updated schedule with each Application for Payment.

B. Progress payment requests may not be processed by Engineer if updated schedule has not been submitted or if update is found unacceptable.

C. Prepare update using most recent accepted version of schedule including:

1. Actual start date of activities that have been started.

2. Actual finish date of activities that have been completed.

3. Percentage of completion of activities that have been started but not finished.

4. Actual dates on which milestones were achieved.

D. Submit narrative report in conjunction with updated schedule describing:

1. Activities added to or deleted from schedule. Identify added activities in manner distinctly different from original activity designations.

2. Changes in sequence or estimated duration of activities.

3. Current or anticipated problems and delays affecting progress, impact of these problems and delays and measures taken to mitigate impact.

4. Assumptions made and activities affected by incorporating change order work into the schedule.

3.04 REVISIONS TO SCHEDULE

A. Submit revised schedule within five (5) days when:

1. Delay in completion of any activity or group of activities indicates an overrun of the contract time or milestone dates by twenty (20) working days or five (5%) percent of the remaining duration, whichever is less.

2. Delays in submittals, deliveries, or work stoppages are encountered making necessary the replanning or rescheduling of activities.

3. The schedule does not represent the actual progress of activities.

4. Any change to the sequence of activities, the completion date for major portions of the work, or when changes occur that affect the critical path.

5. Contract modification necessitates schedule revision; submit schedule analysis of change order work with cost proposal.

B. Submit printed copies of the revised schedule and electronic file.

C. Make revisions on most recently accepted version of schedule.

3.05 THREE WEEK “LOOK AHEAD” SCHEDULE

A. In addition to the overall Construction Schedule, provide a “Look Ahead” schedule in bar chart format. Show work activities undertaken in the preceding week and the work activities that will be undertaken during the upcoming three weeks.

B. Prepare the Look Ahead schedule weekly and submit to the Engineer at the weekly construction progress meeting.

END OF SECTION

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SECTION 01325

FIELD ENGINEERING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Requirements for surveying and surveying record documents.

1.02 REFERENCED SECTION

A. The following Section is referenced in this Section

1. Section 01330 – Submittals
2. Section 01770 – Contract Closeout Procedures
3. Section 01780 – Record Documents

1.03 DATUM

A. Vertical and horizontal datum are based on the coordinates and benchmarks shown on the Drawings or past drawings.

1. Locate and protect Owner furnished control points prior to starting the Work and preserve control points during construction.
2. Re-establish control points disturbed by operations at no cost to Owner.
3. The elevations of any existing facilities, in particular where tie-ins to this Project are required, must be field verified by the Contractor and confirmed with relation to the elevations for the facilities under this Project.

B. Establish other vertical and horizontal control from these Owner furnished reference points as required to properly layout and construct the Work. Install connections based on actual elevations of existing structures to which connections are made.

C. Base layout upon existing structures and the vertical and horizontal datum established by the Owner.

D. The Contractor shall be responsible for the preservation of existing survey monuments or permanent bench marks. Any monuments or bench marks disturbed or destroyed by Contractor shall be referenced and replaced by a licensed land surveyor.

1.04 QUALITY ASSURANCE

A. The Contractor’s Surveyor shall be a land surveyor registered in California or civil engineer qualified and licensed in California with at least five (5) years surveying experience of similar projects.

B. Dimensions for existing structures, piping, paving, and other nonstructural items are taken from the available information during the Owner’s planning and design.

1. Field verify dimensions and conditions in advance of any construction in the area.
2. Any discrepancy between the field survey and the information indicated in the Contract Documents shall be immediately brought to Construction Manager’s attention by written notification.
3. In questions arising as to proper location of lines and grades, the Construction Manager's decision will be final.

C. Accuracy of the Contractor’s stakes, alignments and grades may be periodically and randomly checked by the Construction Manager.

1. If requested by Construction Manager, the Contractor shall supply field labor as required, at no extra charge to Owner, to aid and assist the Construction Manager in checking location and grades of the work as set by the Contractor.

2. This shall include postponing parts of the Work affected by survey check, moving materials and equipment that interfere with a clear line of sight between horizontal control points and the construction work.

3. The Contractor is not to assume that Construction Manager’s check substitutes or complements the Contractor’s required field quality control procedures.

D. The Contractor's registered land surveyor shall check the line and grade of the slab or footing concrete forms prior to the first slab or footing pour at each structure and building.

1.05 SUBMITTALS

A. Comply with Section 01330.

B. Furnish Construction Manager with one (1) copy of all land surveyor notes, calculations, sketches and drawings within 48 hours after completion of each survey task.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 PROJECT SURVEY REQUIREMENTS

A. As part of the bid price for the construction of the improvements provide and be responsible for the layout of all work specified in the contract.

B. Provide necessary surveys, field staking, and positioning for the construction of all components at the proper alignment, elevations, grades, and positions, as indicated on the Drawings and as required for the proper operation and function.

C. Stake the work limits and right-of-way lines prior to the start of sitework.

D. Lay out work, including structures and pipelines, and be solely responsible for executing the Work in accordance with the lines and grades indicated.

3.02 RECORD DOCUMENTS

A. Prepare, maintain and submit Record Documents as specified in Section 01780. The Contractor’s land surveyor is to affix his signature and registration number to applicable record drawings certifying the accuracy of lines and grades shown.

B. Submit survey record drawings before final completion as specified in Section 01770.

END OF SECTION

SECTION 01326

PHOTOGRAPHS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Photographs required before, during and after construction to provide record of site conditions, construction progress, as-built features and significant planned/unplanned events.

1.02 PHOTOGRAPHY

A. Employ a competent professional photographer to record this important factual information.

B. Digital Camera

1. Single lens reflex design
2. 24 mega pixels or greater
3. Nikon D7500 or equal

C. Prepare color photographs, in both print and digital file format, as directed by the Construction Manager. All electronic files are to be furnished in jpeg format and stored on a flash drive.

PART 2 - PRODUCTS

2.01 DELIVERABLE PRODUCTS

A. Provide electronic files, with 8-1/2" x 11" color printed page with thumbnail views and file name identification for each picture.

B. Compile digital images on flash drive and provide with a descriptive index of the images.

C. Index printed pages chronologically and provide in a three-ring binder.

D. Label flash drive’s and protect in an individual plastic case.

PART 3 - EXECUTION

3.01 PRE-CONSTRUCTION PHOTOGRAPHS

A. Provide one hundred (100) preconstruction photographs prior to commencement of Work on the sites.

B. Take at locations to be designated by the Construction Manager.

C. Submit prior to beginning construction.

3.02 DURING CONSTRUCTION PHOTOGRAPHS

A. Provide construction color photographs showing the progress of the Work.

B. Take photos of all Work prior to being buried or covered, including piping, fittings, transitions, tie-ins and valves.

C. Take photos of any significant planned or unplanned events.

D. Take photos from the same four locations at monthly intervals to record progress of work from same vantage points. These vantage points will be determined by the Construction Manager.

E. For pipeline projects, take photos at a maximum of one hundred (100) ft intervals.

F. Take a minimum of forty-eight (48) photographs every month during construction. Submit no more than two hundred (200) photographs each month.

G. Submit photos with each month's Application for Payment.

3.03 AERIAL PHOTOGRAPHS

A. Aerial photographs shall be taken by a professional aerial photographer service approved by the Construction Manager every three months. Aerial photographs must be taken (1) prior to moving facilities onsite or starting construction; and (2) following the completion of all.

B. Aerial photographs shall be by aerial camera with forward motion compensation.

C. Aerial photographs shall provide coverage of the complete project site in an assembled mosaic.

D. Take aerial photographs at the same altitude.

3.04 POST-CONSTRUCTION PHOTOGRAPHS

A. Upon acceptance of the Work, provide one hundred (100) photographs of the Work where directed by the Construction Manager.

B. Submit photographs as part of Contract Closeout.

END OF SECTION

SECTION 01330

SUBMITTALS

PART 1 - GENERAL

1.01 SUMMARY

A. Requirements for the submittal of information that will enable determination of whether the Contractor's proposed materials, equipment or methods of work are in general conformance to the design concept and in compliance with the Contract Documents.

B. Furnish drawings, specifications, descriptive data, certificates, samples, test results, methods, schedules, manufacturer's installation instructions and other information as indicated.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 01999 – Reference Forms

1.03 CONTRACTOR'S RESPONSIBILITIES

A. Contractor shall be responsible for the accuracy and completeness of the information contained in each submittal and shall assure that the materials and equipment incorporated into the Work, or the methods of performing the Work shall be as described in the accepted submittals.

B. Verify that all features of all products conform to the specified requirements. Submittal documents shall be clearly edited to indicate only those items, models, or series of equipment that are being submitted for review. Extraneous materials shall be crossed out or otherwise obliterated.

C. Coordinate submittals among subcontractors and suppliers. Ensure that there is no conflict with other submittals and notify the Engineer in each case where his submittal may affect the work of another contractor or the Owner, including those submittals complying with unit responsibility requirements specified in applicable technical sections.

D. Coordinate submittals with the Work so that work will not be delayed. Coordinate and schedule different categories of submittals, so that one will not be delayed for lack of coordination with another. No extension of time will be allowed because of failure to properly schedule submittals.

E. Do not proceed with work related to a submittal until the submittal process is complete and the submittal has received a response "No Exceptions Taken" or "Make Corrections Noted."

F. Certify on each submittal document that the Contractor has reviewed the submittal, verified field conditions, and complied with the contract documents.

1. Include a copy of the specification section with addendum updates, all referenced and applicable sections, and each paragraph check-marked to indicate specification compliance or marked to indicate requested deviations from specification requirements.

a. Use check marks (✓) to denote full compliance with a paragraph as a whole.

b. If deviations from the specifications are indicated and, therefore requested by the Contractor, underline each deviation and denote by a number in the margin to the right of the identified paragraph.

c. The remaining portions of the paragraph not underlined will signify compliance on the part of the Contractor with the specifications.

d. Include a detailed, written justification for each deviation.

2. Failure to comply with this paragraph is sufficient cause to reject the entire submittal.

1.04 REVIEW COSTS

A. The Owner's cost for review of submittals for the same proposed materials, equipment or work will be apportioned as follows:

1. The cost of review of the initial submittal and the first revised submittal will be borne by the Owner.

2. The cost to review all additional revised submittals after the first revised submittal will be charged to the Contractor. The cost of review shall include, without limitation, administrative, design and engineering activities directly related to review of submittals.

1.05 SUBMITTAL INDEX

A. Within 30 days of the Notice to proceed, submit a list, by specification section, of all submittals to be submitted.

B. Update and resubmit the submittal index on a monthly basis where additional submittals are identified, or as necessary

1.06 CATEGORIES OF SUBMITTALS

A. General

1. Submittals fall into two general categories;

a. Submittals for review and comment require action by the Engineer.

b. Submittals that are primarily for information only do not require Engineer's approval.

B. Submittals for Review and Comment

1. Transmit submittals for review and comment to the Engineer. The Engineer will review the submittal for compliance with the Contract requirements and will provide written comments regarding acceptability.

C. Submittals for Information Only

1. Where specified, furnish submittals to the Engineer for information only. The Engineer may, at the Engineer's option, review and comment on any product data.

2. Incomplete or inadequate product data will be returned to the Contractor for resubmittal.

1.07 TRANSMITTAL PROCEDURES

A. General

1. Transmit submittals regarding material and equipment under cover of a Shop Drawing/Transmittal Form. See Section 01999.

2. Use a separate form for each specific item, class of material, equipment, and items specified in separate, discrete sections, for which the submittal is required.

3. Identify submittal documents common to more than one piece of equipment with all the appropriate equipment numbers.

4. Make submittals for various items with a single form when the items taken together constitute a manufacturer's package or are so functionally related that expediency indicates checking or review of the group or package as a whole.

5. Assign a unique sequential number on the transmittal form accompanying each item submitted.

   a. Use the following format for original submittal numbers: "XXX"; where "XXX" is the sequential number assigned by the Contractor.

   b. Use the following format for resubmittals: "XXX-Y"; where "XXX" is the originally assigned submittal number and "Y" is a sequential letter assigned for resubmittals, i.e., A, B, or C being the 1st, 2nd, and 3rd resubmittals, respectively. Submittal 25B, for example, is the second resubmittal of submittal 25.

B. Electronic Submittals

1. Electronic submittals are preferred except as otherwise indicated.

2. Prepare electronic submittals and Shop Drawings in electronic (*.pdf) format including half-sized and full-sized drawings, catalog information and other required submittal information.

3. Break down submittals that are larger than 10 megabytes into smaller sections, using logical division points to create sections.

4. Electronically bookmark electronic submittals greater than 30 pages in length by major submittal section to facilitate ease of navigation.

C. Paper copy submittals are an acceptable alternative to electronic submittals if the Contractor demonstrates, to the satisfaction of the Engineer that electronic submittals presents a hardship.

D. Deviation from Contract

1. If the Contractor proposes to provide material, equipment, or method of work that deviates from the project manual, so indicate under "Proposed Deviations" on the transmittal form accompanying the submittal copies.

E. Submittal Completeness

1. Submittals that do not have all the information required to be submitted, including deviations, are not acceptable and will be returned without review.

1.08 SUBMITTAL CONTENT

A. Prepare submittals in compliance with individual Specification Sections and as indicated herein.

B. Shop Drawings:

1. Develop project-specific, scaled drawings to fully identify materials and products that will be provided and their relationship to other products that will be furnished and installed.

2. Do not utilize reproductions of the Contract Documents as the basis for the submittal.

3. Identify products, assemblies, equipment and systems.

4. Provide equipment identification numbers or tag numbers, wiring diagrams, and setting diagrams.

5. Identify critical dimensions.

C. Product Data:

1. Provide information necessary to demonstrate conformance with the specified requirements. Include performance curves, specifications, and wiring diagrams.

2. Product data may consist of manufacturer's standard catalog information and data sheets, marked to indicate the specific products that will be provided.

3. Provide supplemental information as necessary to fully demonstrate how products will be modified from the manufacture's standard products to meet the specification requirements.

D. Manufacturer's Instructions: Written or published information that establishes the manufacturer's recommendations, guidelines and procedures for handling and installation of products, equipment and assemblies.

E. Samples: Mount, display or package samples in a manner that will facilitate review and establish workmanship and quality of materials.

1.09 SUBMITTAL REQUIREMENTS

A. When the Contract Documents require a submittal, submit the specified information as follows:

1. Submittals for Review and Comment:

a. Electronic Submittal: Submit one electronic (*.pdf) submittal.

b. Paper Copy Submittal: If paper copy submittals are acceptable to the Engineer, submit four (4) copies of submitted information plus one reproducible original for review unless otherwise specified.

2. Submittals for Information Only:

a. Electronic Submittal: Submit one electronic (*.pdf) submittal.

b. Paper Copy Submittal: If paper copy submittals are acceptable to the Engineer, submit four (4) copies of submittal information for review, unless otherwise specified.

1.10 REVIEW PROCEDURE

A. General

1. The Engineer will review submittals within the processing time identified in paragraph "Processing Time" and return:

a. Electronic Submittal – a signed submittal response document, in (*.pdf) format.

b. Paper Copy Submittal – Two marked up copies of the submitted copies. The reproducible original will be retained by the Engineer.

B. Submittals for Review and Comment

1. The returned submittal will indicate one of the following actions:

a. "NO EXCEPTIONS TAKEN" – The material, equipment or work method complies with the project manual.

b. "MAKE CORRECTIONS NOTED" – Limited corrections are required.

1) Provide a corrected copy where:

a) The information is to be included in the O&M data.

b) If requested by the Engineer.

c. "AMEND AND RESUBMIT" – The submittal is insufficient or contains incorrect data.

d. "REJECTED – SEE REMARKS" – The material, equipment, or work method does not comply with the project manual. Submittals with deviations that have not been identified clearly may be rejected.

2. For submittals marked "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED.

a. The Contractor may begin implementing the work method or incorporating the material and equipment covered by the submittal in accordance with any noted corrections.

3. For submittals marked "AMEND AND RESUBMIT" or "REJECTED – SEE REMARKS"

a. Contractor shall provide a typed letter responding to each of the Engineer's review comments with each resubmittal.

b. Except at its own risk, the Contractor shall not undertake the work covered by such submittals until a new submittal is submitted and returned marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED."

C. Submittals for Information Only

1. The returned submittal will indicate ACCEPTED FOR RECORD" if the submittal is complete and adequate.

2. Engineer may return comments on information submittals to identify concerns with what was submitted, in such case, Contractor shall address concerns in writing and return a revised submittal.

1.11 PROCESSING TIME

A. Prepare submittals and transmit to Engineer for review in sufficient time to allow Engineer's review; manufacture, fabrication or assembly of materials and systems; and shipping of material to the site in time for installation in accordance with the Contractor's schedule.

B. Engineer's time for review will begin upon receipt of a complete and comprehensive submittal containing all required information.

C. Engineer will review submitted information and transmit a response to Contractor within 30 days after receipt, subject to the following:

1. In some instances, review times for specific submittals may be modified by the individual specification Section.

2. Resubmittals will be subject to the same review time.

D. No adjustment of Contract Time or Contract Price will be allowed due to delays in the progress of the Work that are caused by rejected submittals and subsequent resubmittals.

1.12 EFFECT OF REVIEW OF CONTRACTOR'S SUBMITTALS

A. The purpose of submittals is to demonstrate how Contractor intends to conform to the Contract Documents and design concepts. Engineer is entitled to rely upon the accuracy and completeness of designs, calculations, or certifications made by licensed professionals whether or not a stamp or seal is required by the Contract Documents.

B. The review procedure is based on the Contractor's guarantee that all features and characteristics not requiring submittals conform to the contract documents.

C. Review of contract drawings, methods of work, or information regarding materials or equipment the Contractor proposes to provide, does not relieve the Contractor of its responsibility for

1. Fulfilling the requirements of the Contract,

2. Proper operation of the equipment,

3. Correction of defective work

D. Reviews shall not be regarded as an assumption of risk or liability by the Engineer or the Owner.

E. A mark of "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED" means that the Owner has no objection to the Contractor, upon its own responsibility, using the plan or method of work proposed, or providing the materials or equipment proposed.

F. The Engineer's review of shop drawings, samples, or test procedures will be only for conformance with design concepts and for compliance with information given in Contract Documents. The Engineer's review does not extend to:

1. Accuracy of dimensions, quantities, or performance of equipment and systems designed by Contractor.

2. Contractor's means, methods, techniques, sequences, or procedures except when specified, indicated on the Drawings, or required by Contract Documents.

3. Safety precautions or programs related to safety which shall remain the sole responsibility of the Contractor.

G. Review of a separate item does not indicate approval of the assembly in which the item functions.

1.13 SUBSTITUTIONS OR “OR EQUAL” ITEMS

A. Named or Sole Source Times

1. Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the naming of the item is intended to establish the type, function, and quality required.

2. Unless the name designated a “sole source” and/or is followed by words indicating that no substitution is permitted, materials, or equipment of other Suppliers may be accepted by Engineer if sufficient information is submitted by Contractor to allow Engineer to determine that the material or equipment proposed is equivalent or equal to that named.

B. Initiating Substitution Request

1. To propose to furnish or use a substitute item of material or equipment, Contractor shall use the Proposed “Or Equal” Substitution Submittal Transmittal Form found in Section 01999.

2. Submit the Substitution Submittal form to Engineer for acceptance, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified.

3. State that the evaluation and acceptance of the proposed substitute will not prejudice Contractor’s achievement of Substantial Completion on time, whether acceptance of the substitute for use in the Work will require:

a. A change in any of the Contract Documents (or in the provisions of any other direct contract with Owner for Work on the Project) to adapt the design to the proposed substitute.

b. Incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty.

4. Identify all variations of the proposed substitution from that specified

5. Identify available maintenance, repair, and replacement service

6. Provide an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change

7. The Owner or Engineer may require Contractor to furnish at Contractor's expense additional data about the proposed substitute.

8. If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, Contractor may propose to furnish or utilize a substitute means, method, sequence, technique or procedure of construction. Submit sufficient information to allow Engineer to determine that the proposed substitution is equivalent to that indicated or required by the Contract Documents.

C. Review Procedure

1. The procedure for review of substitutions by Engineer will be similar to that provided in this Section.

2. Requests for substitutions may only be submitted by the Contractor.

3. All requests for substitution shall be submitted within thirty (30) calendar days after the date of Notice to Proceed unless the Owner has agreed in writing to a later submittal date and the Contractor agrees to comply with all conditions of the Owner for the late submittal.

4. The Owner's agreement to a later submittal date shall not be construed as favorable review or acceptance of the proposed "or equal" substitution.

5. The Engineer will respond to all requests for substitutions within thirty (30) days following receipt of an acceptable substitution submittal, unless the Engineer notifies the Contractor within fourteen (14) days after receipt of the proposed "or equal" substitution submittal that more time is needed to complete a thorough review.

6. The Engineer and Owner will be the sole judge of acceptability, and no proposed "or equal" substitution item or service will be ordered, installed or utilized without Engineer's prior written acceptance that will be evidenced by either a Change Order or an accepted Shop Drawing.

7. As a condition of acceptance, the Owner may require Contractor to furnish, at Contractor's expense, a special performance guarantee or other surety with respect to a proposed "or equal" substitution item or service.

D. Modification due to Substitutions

1. All costs for redesign required by the implementation of the proposed substitute shall be borne by the Contractor.

2. All costs associated with incorporating a substitution into the project shall be borne by the Contractor.

END OF SECTION

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SECTION 01450

TESTING AND INSPECTIONS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Tests and inspections and allocation of responsibilities associated with tests and inspections.

B. The detailed tests and inspections required to be performed by the Contractor are specified in the individual Sections of Divisions 2 through 16.

1.02 OWNER'S TESTING AGENCY

A. Owner will employ and pay for testing conducted to confirm compliance with the requirements of the Contract. Testing may be on-site or off-site.

B. Owner's Testing Agency will perform tests, inspections, and sampling of the following work:

1. Earthwork, including collection and testing of representative material samples and compaction testing.

2. Concrete placement, reinforcement, ingredients and quality control.

3. Masonry placement, reinforcement, ingredients and quality control.

4. Structural steel.

5. Fire Proofing, density sampling and thickness inspection.

C. The Owner's employment of the Testing Agency does not relieve the Contractor of his obligations to perform the work in accordance with Contract requirements nor to retain their own testing firm for quality control.

1.03 QUALITY ASSURANCE

A. Qualifications of Testing Agents: Agencies, bureaus, or laboratories shall be acceptable to the Engineer and shall meet the requirements ASTM E329.

B. Failure of Materials and Equipment Tested or Inspected:

1. The Contractor shall be charged for retesting and reinspection resulting from the Contractor's noncompliance with the Contract as evidenced by tests and inspections by the Owner's Testing Agency.

2. The Owner will backcharge the Contractor for costs incurred in the event the Contractor's provides inadequate quality control or material requires excessive repeated testing by the Owner's Testing Agency.

1.04 TESTING AGENCY'S DUTIES

A. Perform required inspecting, sampling and testing of materials and methods of construction.

1. Comply with specified standards, other recognized authorities as specified.

2. Check for compliance with Contract Documents.

B. Promptly notify the Engineer and the Contractor of observed irregularities or deficiencies in the work.

C. Promptly submit written reports to the Contractor and to Engineer. Include:

1. Date of test, inspection or sampling; project title and number; testing agency's name and address; name and signature of inspector.

2. Record of temperature and weather, identification of applicable specification Section, type of inspection or test performed, and reference to applicable standards and codes.

3. Location of tests; sample locations; test results; and observation regarding compliance with Contract Documents.

D. The testing agency is not authorized to release, revoke, alter or enlarge on the requirements of the Contract Documents, approve or accept any portion of the work, or perform any of the Contractor's duties.

1.05 CONTRACTOR'S RESPONSIBILITIES

A. Initiate and coordinate tests and inspections required by Contract Documents and public authorities having jurisdiction of the work.

B. Notify the Owner's Testing Agency through the Owner's Representative a sufficient time in advance (but no less than 48 hours) of the manufacture of materials to be supplied which, by requirements of the Contract Documents, must be tested at the source of supply so that the Laboratory may arrange for testing.

C. When changes of construction schedule are necessary during construction, coordinate all such changes with the Owner's Testing Agency as required.

D. When the Owner's Testing Agency is ready to test according to the established schedule, but is prevented from testing or taking specimens due to incompleteness of the work, all extra charges for testing attributable to the delay may be backcharged to the Contractor and shall not be borne by the Owner.

E. Provide access, facilities, tools, and labor necessary for duties to be performed at the site by the Owner's Testing Agency and Inspector, including furnishing ladders, hoisting, lighting, water supply and like services.

F. Provide and maintain, for the sole use of the Owner's Testing Agency, adequate facilities for the safe storage and proper curing of concrete test cylinders on the Project site as required by ASTM C31.

G. Furnish and deliver samples of materials to be tested at no extra cost to Owner. Test samples will be selected by the Inspector or Owner's Testing Agency and not by the Contractor.

H. Reports:

1. Furnish copies of each test and inspection report, signed and certified by the Contractor's Testing Agency Supervising Engineer to the Contractor and to the Engineer.

2. Within 48 hours, process and distribute the required copies of test reports and related instructions to assure necessary retesting and replacement of materials with the least possible delay in progress of the work.

I. Records:

1. Maintain correct records on an appropriate form for all inspections and tests performed, instructions received from the Owner or testing agency, and actions taken as a result of those instructions.

2. These records shall include evidence that the required inspections or tests have been performed (including type and number of inspections or tests, nature of

defects, causes for rejection, etc.), proposed or directed remedial action, and corrective action taken.

3. Document inspections and tests as required by each Section of the Specifications.

J. If laws, ordinances, rules, regulations, or orders of public agency having jurisdiction require work to be inspected, tested or approved by some authority other than the Owner, or Contractor, the Contractor shall give required notices and make arrangements, deliver to the Owner the certificates of inspection, test, or approval of such public agency, and pay costs therefore unless otherwise provided in the Contract Documents.

K. Completed Work: Should the Owner require tests and inspections for work completed before final acceptance of entire work, furnish necessary facilities, labor, and materials to uncover or remove work in question to extent necessary.

1. If such work is found defective due to fault of the Contractor, the Contractor shall defray expense of removal, test, and inspections, and satisfactory reconstruction. Time extension may not be granted.

2. If such work is found to conform to requirements of the Contract, the Contractor shall be reimbursed by the Owner for facilities, labor and materials required for removal, and costs of satisfactory reconstruction in accordance with Contract amounts for extra work. Reasonable time extension shall be granted.

1.06 TEST PROCEDURES

A. Testing:

1. Owner's Testing Agency will perform tests according to method(s) of test specified in these Specifications.

2. If no procedure or test method is specified, testing shall conform to material specification references unless otherwise directed by the Owner.

3. The Owner's Testing Agency will tag, seal, label, record, or otherwise suitably identify the materials for testing. No materials shall be used in the work until the test reports are submitted and approved, excepting only the materials specified to be placed or installed prior to testing.

B. Retesting:

1. Repeat applicable tests at specified intervals, when:

a. The source of supply is changed.

b. The characteristics of the materials change or vary.

c. Unsatisfactory test results are received.

2. Quantity and nature of additional testing, if required, will be determined by the Owner.

3. Additional tests shall be taken in the presence of the Engineer.

4. Proof of non-compliance will make the Contractor liable for any corrective action which the Owner feels is prudent, including complete removal and replacement of defective materials.

5. Nothing contained herein is intended to imply that the Contractor does not have the right to have tests performed on any material at any time for his own information and job control so long as the Owner does not assume responsibility for costs or for giving them consideration when appraising quality of materials.

1.07 PAYMENT FOR TESTING

A. Initial Services:

1. The Owner will pay for initial testing services requested by the Owner.

2. When initial tests indicate non-compliance with the Contract Documents, the costs of initial tests associated with that non-compliance will be deducted by the Owner from the Contract Sum.

B. When initial tests indicate non-compliance with the Contract Documents, subsequent retesting occasioned by the non-compliance shall be performed by the same testing agency, and costs thereof will be deducted by the Owner from the Contract Sum.

C. Reimburse the Owner all or any part, as the Owner may deem just and proper, of the inspection costs incurred by the Owner due to:

1. Failure of materials to pass initial tests.

2. Contractor's failure to complete the work within the Contract time, and any previously authorized extensions thereof.

3. Claims between separate contractors.

4. Covering of work before the required inspections or tests are performed.

5. Additional inspections required for Contractor's correction of defective work.

6. Overtime costs for acceleration of work done for Contractor's convenience.

1.08 CONTRACTOR'S CONVENIENCE TESTING

A. Inspection and testing performed exclusively for the Contractor's convenience shall be the sole responsibility of the Contractor.

1.09 REQUEST FOR TESTING PROCEDURES

A. Testing will be performed as ordered by the Owner's Representative. Contractor shall follow the Owner's Representative's procedures for requests for tests and inspections. Procedure are as follows:

1. Fill out the Request for Testing form provided by the Owner's Representative.

2. Describe the test and the date the test is required. The request will be given to the Owner's Representative for approval.

3. Submit the Request for Test at least forty-eight (48) hours in advance of the needed date for the test.

4. The Owner's Representative will request the services from the testing agency.

5. The testing agency will be provided a copy of the testing request which will be completed by the testing firm indicating the services provided.

6. Provide a testing schedule which will be reviewed each week for the following week's work.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01500

CONSTRUCTION FACILITIES AND UTILITIES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Requirements for Contractor's temporary facilities at the job site and for the prosecution of the Work.

1.02 EASEMENTS

A. Temporary construction easements and permanent easements have been established by the Owner.

B. Contractor shall confine equipment, materials storage and all construction activities within the temporary easements shown.

1.03 CONTRACTOR'S CONSTRUCTION OFFICE

A. Maintain a suitable office at the site.

B. Temporary office will be considered as the headquarters of the Contractor's representative whom is authorized to receive drawings, instructions, or other communication or articles. Any communication given to the representative or delivered at Contractor's temporary office at the site in his absence is deemed to have been delivered to the Contractor.

C. Maintain copies of the Drawings, Specifications, and other Contract documents at Contractor's temporary office at the site and make these available for use at all times.

1.04 STAGING AREA

A. Before starting the work, submit a proposed plan and layout for all temporary offices, sanitary facilities, storage areas, temporary water service and distribution, and temporary power service and distribution.

B. Erect temporary security fence as appropriate. Contractor is responsible for the security of the staging area. Owner and Engineer do not take any responsibility for missing or damaged equipment, tools or personal belongings.

C. Store only those materials and equipment that are related to the construction within the staging area.

1.05 FENCES

A. Erect temporary fences at the boundary of construction easements and in locations indicated on the Drawings to protect existing wetlands and other environmentally sensitive areas.

B. When existing fences require temporary removal, and these fences are required to restrain animals and stock, erect fences to prevent animals from escaping. Contractor shall be responsible for loss, injury or damage that results from failure to restrain animals and stock.

C. When working in open areas where animals and stock are maintained, provide adequate temporary fencing around open excavations to prevent injury to animals and stock.

1.06 TEMPORARY ACCESS ROADS

A. Construct temporary access roads where access to various portions of the site is otherwise unavailable.

1. Construct a point of access that will allow Contractor to gain access onto the property and within the temporary construction easement.

2. At the conclusion of the work, remove all temporary facilities, re-grade drainage ditches and return the area to its original condition.

3. Contractor is responsible for securing the property until fencing is returned to original conditions and all temporary fences, culverts and backfill material has been removed and the area returned to its original condition.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 TEMPORARY ELECTRIC POWER

A. Contractor shall make provisions to obtain temporary electric power for use during construction. The Contractor shall be responsible for obtaining a source of electric power for construction.

B. Cost of electric power shall be borne by the Contractor.

C. The temporary electric power installation shall meet the construction safety requirements of OSHA, state, and other governing agencies.

3.02 TEMPORARY TELEPHONE SERVICE

A. Provide telephone service at the construction site office. Cellular telephone service is acceptable.

B. The Contractor is not permitted to use the Owner's telephone service.

3.03 TEMPORARY SANITARY FACILITIES

A. Provide toilet and wash-up facilities for the construction work force at the site of work.

B. Facilities shall comply with applicable laws, ordinances, and regulations pertaining to the public health and sanitation of construction field offices, dwellings, and camps.

3.04 TEMPORARY WATER SUPPLY

A. Use potable water for soil moisture conditioning, pipeline pressure testing and other construction uses.

B. Obtain approvals and authorizations from the owner of the public water distribution system for use of water and pay all fees associated with consumption of the potable water.

1. Make the necessary connections to the public water supply and install all conveyance piping and truck filling facilities that are required to transport water for the work.

2. Temporarily install valves, flow meters, air gaps, backflow preventers and other appurtenances required by the owner of the public water distribution system to maintain the integrity of the existing water systems.

3. Remove temporary water facilities when no longer needed.

END OF SECTION

SECTION 01560

ENVIRONMENTAL CONTROLS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Environmental controls to be maintained during construction.

1.02 APPLICABLE LAWS AND REGULATIONS

A. Comply with applicable Federal, State and local environmental, health and safety laws and regulations.

1.03 REFERENCED SECTIONS

A. The following Section is referenced in this Section

1. Section 01330 – Submittals
2. Section 02241 – Control of Water

1.04 SUBMITTALS

A. Comply with Section 01330.

B. Copies of permits and approvals for construction as required by Laws and Regulations and governing agencies.

C. Plan for disposal of waste materials and intended haul routes.

D. Dust control plan.

E. Updated Erosion and Sediment Control Plan meeting the requirements shown on the Drawings and the permit.

1.05 SITE CLEANLINESS

A. Maintain work sites, staging areas, public roadways and private property clean and free of rubbish and debris. Remove materials and equipment from the site when they are no longer necessary for the Work.

B. Keep buildings that are occupied by the Contractor clear of refuse and debris and in a reasonably neat condition.

C. Upon completion of the work and before final acceptance, clear work areas of equipment, unused materials, and rubbish to present a clean and neat appearance.

1.06 HAZARDOUS MATERIALS

A. Handle paints, solvents, and other construction materials with care to prevent contaminants from entering into sewers, storm drains, surface waters, or soils.

B. Develop an emergency response plan for spills of sewage, paint, oil, and other hazardous materials.

C. In the event of a spill, immediately notify the ENGINEER, OWNER and jurisdictional agencies. Take proper measures to clean up spills of hazardous materials in accordance with the emergency response plan, State, Federal, and local regulations and manufacturer's recommendations.

1.07 AIR POLLUTION CONTROL

A. Contractor shall not discharge smoke, dust, and other contaminants into the atmosphere that violate the air pollution regulations for the area.

B. Do not idle internal combustion engines for prolonged periods of time.

C. Minimize dust nuisance by cleaning, sweeping and sprinkling work areas, exposed soil, and haul roads with water or by powered brushing.

1.08 NOISE CONTROL

A. Comply with local controls and noise level rules, regulations, and ordinances which apply to any work performed pursuant to the Contract. If the requirements of this Section are more restrictive than those of the local regulations, the requirements of this Section shall govern.

B. Minimize noise from construction equipment.

1. Whenever possible, utilize construction equipment powered by electric motors rather than diesel or gas driven engines.

2. Locate construction equipment such as compressors and generators as far from sensitive receptors as feasibly possible. Erect temporary sound blankets around noisy equipment to mitigate noise propagation.

3. Equip internal combustion engines with a muffler and provide a noise enclosure around stationary equipment such as engine-driven generators, welders, compressors, and pumps. Use “quiet package” and “hush” equipment.

4. Do not start-up machines or equipment prior to or after the specified construction work hours.

C. Noise Complaints: Should a specific noise impact complaint occur, Engineer has the prerogative to direct Contractor to implement one of the following noise mitigation measures at Contractor’s expense:

1. Relocate stationary construction equipment away from the affected property.

2. Shut off idling equipment.

3. Reschedule construction operations to avoid periods of noise annoyance identified in the complaint.

4. Install temporary or portable acoustic barriers around stationary construction noise sources.

5. Operate electric powered equipment using utility power.

D. Amplified sounds such as telephone, loudspeakers, and other forms of loud communication that constitute a nuisance and potential disturbance shall not be used.

1.09 DIRT AND MUD CONTROL

A. Contractor is responsible for preventing dirt, mud, and debris from accumulating on streets, sidewalks, parking areas, or other paved surfaces and for maintaining the cleanliness of these areas.

1. Track Out: Clean vehicle tires of mud and dirt before exiting the site.

2. Cover all dump truck loads and other loads that may result in debris falling from the vehicle.

3. Sweeping Paved Areas:

a. Maintain cleanliness of paved areas used by the Contractor for the duration of the project.

b. Sweep paved areas that have been used since the previous cleaning on at least a weekly basis, or more frequently when directed by the Engineer. Utilize regenerative air or vacuum pickup sweepers together with proper dust control methods to remove sediment, dust, dirt, and other matter from paved areas. Do not use excessive water resulting in mud on public streets.

1.10 TREE AND PLANT PROTECTION

A. Temporary tree protection

1. Carefully protect existing trees from damage by construction activities. Additional requirements for specific trees may be shown on the Plans or designated in the Contract Documents.

2. Every reasonable effort shall be made to avoid creating conditions adverse to the tree's health.

a. The natural ground within the dripline of protected trees shall remain undisturbed.

b. The dripline area of protected trees shall be identified on the ground by a circle with a radius measurement from the trunk of the tree to the tip of its longest limb.

c. No limb shall be cut back in order to change the dripline measurement.

d. The area within the dripline is a critical area of the tree's root zone and defines the minimum protected area of each tree.

e. No vehicles, construction equipment, temporary buildings, supplies, materials or facilities shall be driven, parked, stockpiled or located within the dripline of protected trees.

f. No trees outside the construction limits shall be removed or damaged, unless authorized by the Construction Manager.

3. If a tree is damaged or destroyed by construction (other than those designated for removal), the Contractor shall replace it in species, size and grade with a healthy tree as directed by the Construction Manager. Where it is necessary to replace a tree damaged by construction, the Contractor shall bear all expenses required to establish the replacement tree and pay any tree removal fees.

B. Cultivated areas and other surface improvements:

1. Landscaped areas and other surface improvements which are damaged by actions of the Contractor shall be restored.

2. Minimize vegetation removal.

3. Areas shall not be cleared until construction activities require the work.

4. Erosion controls shall be in place prior to clearing and grading activities.

C. Other areas to be protected:

1. Environmentally sensitive areas are indicated on the Drawings.

2. Erect a protective fence around the area to be protected.

a. The protective fence shall be 4 feet tall, international orange high density polyethylene resin (Visi-Barrier or equal).

b. Posts shall be heavy duty steel T-posts with corrosion resistant coating spaced at 5 feet on centers.

1.11 OIL SPILL PROTECTION AND CONTROL

A. Store fuel and oil in accordance with requirements of the Uniform Fire Code and applicable National Fire Protection Association standards.

B. Assume responsibility for the prevention, containment, and cleanup of spilled oil, fuel, and other petroleum products used in the Contractor's operations. Prevention, containment and cleanup costs shall be borne by the Contractor.

C. Periodically inspect fuel hoses, lubricating equipment, hydraulically operated equipment, oil drums, and other devices for drips, leaks or signs of damage. Maintain and properly store to prevent spills and vandalism.

D. Construct dikes around storage tanks, or locate tanks to prevent spills from escaping to surface waters or drainage ditches.

E. Remove oils on land using sand, clay, sawdust or other absorbent material and dispose in an acceptable manner. Store waste materials in drums or other leak proof containers after cleanup and during transport to disposal.

1.12 WATER POLLUTION CONTROL

A. Divert sanitary sewage and non-storm waste flow interfering with construction and requiring diversion to sanitary sewers. Do not cause or permit action to occur which would cause an overflow to existing waterway.

B. Prior to commencing excavation and construction, obtain Project Manager's agreement with detailed plans showing procedures intended to handle and dispose of sewage, groundwater, and stormwater flow, including dewatering pump discharges.

C. Do not dispose of volatile wastes such as mineral spirits, oil, chemicals, or paint thinner in storm or sanitary drains. Disposal of wastes into streams or waterways is prohibited. Provide acceptable containers for collection and disposal of waste materials, debris, and rubbish.

1.13 EROSION, SEDIMENT, AND FLOOD CONTROL

A. Provide, maintain, and operate temporary facilities to control erosion and sediment releases, and to protect the Work and existing facilities from flooding during construction period.

B. Comply with state and local requirements.

C. Comply with Section 02241.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01570

STORM WATER QUALITY CONTROLS

PART 1 - GENERAL

1.01 SUMMARY

A. Requirements for the compliance with the General Permit for Discharges of Storm Water Associated with Construction Activity in the State of California.

1.02 REQUIREMENTS

A. Dischargers whose projects disturb 1 or more acres of soil or whose projects disturb less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres, are required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity Construction General Permit Order 2009-0009-DWQ adopted on September 2, 2009. Construction activity subject to this permit includes clearing, grading and disturbances to the ground such as stockpiling, or excavation.

B. The appropriate Regional Water Quality Control Board (RWQCB) enforces the General Permit. Coverage under a General Permit requires the electronic filing of all Permit Registration Documents (PRDs), Notices of Termination (NOT), changes of information, annual reporting and other compliance documents through the State Water Board's Storm water Multi-Application and Report Tracking System (SMARTS) website.

C. Construction activity includes, but is not limited to: clearing, grading, demolition, excavation, construction of new structures, pipelines and reconstruction of existing facilities involving removal and replacement that results in soil disturbance. This includes construction access roads, staging areas, storage areas, stockpiles, and any off-site areas which receive run-off from the construction project such as discharge points into receiving waters.

D. While the City will be responsible to the RWQCB for compliance with the permit, the City will require the Contractor to provide the detailed planning and compliance activities required insofar as they would potentially affect the Contractor's methods and means of performing the Work.

E. If a violation of the permit is due to the Contractor's actions or inactions and a fine is assessed, the Contractor shall be responsible for the fine.

F. A copy of the Fact Sheet for the General Permit is available on the SWRCB website at: http://www.swrcb.ca.gov/water_issues/programs/stormwater/ .

1.03 RESPONSIBILITIES

A. City of Ukiah's Responsibilities

1. A City staff person will be designated the Legally Responsible Person (LRP) who will electronically file Permit Registration Documents (PRDs) prior to commencement of construction activity.

2. PRDs will be filed by the City but may be prepared by others. PRDs consist of:

a. Notice of Intent (NOI)

b. Risk Assessment

c. Site Map

d. Storm Water Pollution Prevention Plan (SWPPP)

e. Annual Fee

f. Signed Certification Statement

3. A City staff person will be the Legally Responsible Person (LRP) who will electronically file the following documents which may be prepared by others:

   a. Notices of Termination (NOT)

   b. Changes of Information

   c. Annual Reporting

   d. Other Compliance Documents

4. City will pay fees associated with filing NOI and annual reports.

5. City will furnish the Contractor with base maps of a suitable scale in order to prepare required documents.

B. Contractor's Responsibilities

1. Comply with the SWRCB, RWQCB, County, City and other local agency requirements regarding stormwater management, inspection and monitoring.

2. Be responsible for meeting the requirements of the General Permit except as specifically noted otherwise herein.

3. Submit all documents and reports in electronic format suitable for the City to upload to the SMARTS website.

4. Prepare a SWPPP and submit the SWPPP for City review at least 30 days prior to any soil disturbing construction. The SWPPP shall meet the following requirements:

   a. SWPPP shall be prepared by a Qualified SWPPP Developer (QSD) as defined in Section VII of the General Permit.

   b. The SWPPP and each amendment to the SWPPP must be signed by the QSD.

   c. The Risk Level shall be determined by a QSD or QSP certified professional.

   d. SWPPP shall meet the requirements of Section XIV of the General Permit and meet the following objectives:

      1) All pollutants and their sources, including sources of sediment associated with construction, construction site erosion and all other activities associated with construction activity are controlled;

      2) Where not otherwise required to be under a Regional Water Quality Control Board (RWQCB) permit, all non-stormwater discharges are identified and either eliminated, controlled, or treated;

      3) Site BMPs are effective and result in the reduction or elimination of pollutants in stormwater discharges and authorized non-stormwater discharges from construction activity to the Best Available Technology/Best Control Technology (BAT/BCT) standard;

      4) Calculations and design details as well as BMP controls for site run-on are complete and correct.

      5) Stabilization BMPs installed to reduce or eliminate pollutants after construction are completed.

      6) Identify post-construction BMPs, which are those measures to be installed during construction that are intended to reduce or eliminate pollutants after construction is completed.

7) Identify and provide methods to implement BMP inspection, visual monitoring, Rain Event Action Plan (REAP) and Construction Site Monitoring Program (CSMP) requirements to comply with the General Permit.

e. Amend and update the SWPPP whenever there is a change in construction or operations which may affect the discharge of pollutants to storm water.

5. Provide information and certification to the Engineer as necessary to complete the NOI.

6. Make the SWPPP available at the construction site during working hours, and make it available upon request by a State or Municipal worker.

7. Designate a Qualified SWPPP Practitioner (QSP)

   a. Ensure all BMPs are implemented by a QSP.

   b. QSP is responsible for non-storm water and storm water visual observations, sampling and analysis.

   c. QSP shall meet the certification requirements of Section VII of the General Permit.

8. Install, construct, implement, monitor, maintain and remove upon completion all of the BMPs and other pollution prevention measures.

9. Implement the Rain Event Action Plan identified in the SWPPP 24 hours in advance of any the predicted precipitation event.

10. Implement the Construction Site Monitoring Plan (CSMP) developed in the SWPPP for the specific Risk Level of the project. Retain records of all monitoring information and copies of all reports and submit to the City.

11. Submit to the City all Non-Compliance reporting required by the General Permit including but not limited to:

    a. Numeric Action Level (NAL) exceedances.

    b. Numeric Effluent Limitation (NEL) Violation Report.

    c. Self-reporting of any other discharge violations

    d. Discharges which contain a hazardous substance in excess of reportable quantities established in 40 CFR §§ 117.3 and 302.4, unless a separate NPDES Permit has been issued to regulate those discharges.

12. Prepare the annual compliance report and submit to the City 15 days prior to September 1 of each year. Annual report shall comply with the requirements of Section XVI – Annual Reporting Requirements of the General Permit including but not limited to:

    a. Sampling and analysis results including laboratory reports, analytical methods and reporting limits and chain of custody forms (Risk Levels 2 and 3);

    b. Corrective actions and compliance activities, including those not implemented;

    c. Violations of the General Permit;

    d. Date, time, place, and name(s) of the inspector(s) for all sampling, inspections, and field measurement activities;

    e. Visual observation and sample collection exception records; and

    f. Training documentation of all personnel responsible for General Permit compliance activities.

13. Provide the Engineer the names and 24-hour phone numbers for parties responsible for implementing, monitoring, inspecting and maintaining the SWPPP.

14. Contractor shall be bound to the conditions on the Notice of Intent (NOI) that will be filed by the City and will be responsible for all costs associated with the implementation of the Plan including all fines, damages and job delays incurred due to failure to implement the requirements of the General Permit.

15. Notify the Engineer immediately following a request from any regulatory agency to enter, inspect, sample, monitor or otherwise access the Project Site or its records.

16. Take the proper actions to prevent stormwater coming into contact with contaminants and sediments from migrating offsite or entering storm sewer drainage systems. Take immediate action if directed by the Engineer or if the Contractor observes contaminants and/or sediments entering the storm drainage system, to prevent further stormwater from entering the system.

17. Provide information and certification to the Engineer as necessary to complete the NOT.

    a. Only biodegradable wattles containing no plastic can remain on a site applying for a NOT. Wattles containing plastic netting (including plastic specified as photo-degradable) are considered “construction materials and waste” by the State and must be disposed of.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01600

MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Materials, equipment and products incorporated into the work.

1.02 MATERIAL AND EQUIPMENT REQUIREMENTS

A. Specified in individual specification Sections in Divisions 2 through 16.

B. Specifications are minimum requirements and manufacturers' standard products may require modifications to meet the specified requirements.

C. Provide products and equipment with all accessories, trim, finish, safety guards and other devices needed for a complete and operational installation.

D. Products to be supplied in quantity shall be the same product from a single source to provide standardization and interchangeability.

1.03 DEFINITIONS

A. Named Products: Items identified by manufacturer's product name and model number as indicated in the manufacturer's published product data.

B. Materials: Products that are shaped, cut, worked, finished or otherwise fabricated or installed to form a part of the Work.

C. Equipment: A product with working parts, whether motorized or manually operated, that requires connections such as wiring or piping.

1.04 PACKAGING AND MARKING

A. Equipment shall be protected against damage from moisture, dust, handling, or other cause during transport from manufacturer's premises to site. Each item or package shall be marked with the number unique to the specification reference covering the item.

B. Stiffeners shall be used where necessary to maintain shapes and to give rigidity. Parts of equipment shall be delivered in assembled or subassembled units where possible.

C. Bearing housings, vents and other types of openings shall be wrapped or otherwise sealed to prevent contamination by dust and dirt.

1.05 SHIPPING AND DELIVERY

A. Plan, order, coordinate and deliver materials and equipment in accordance with the construction schedule to avoid delays and conflicts with the Work.

B. Deliver anchor bolts and bolt templates sufficiently early to permit setting and placement in structural concrete.

C. Unload products in accordance with the manufacturer's handling instructions. Promptly inspect for completeness and evidence of damage during shipment.

1.06 HANDLING AND STORAGE

A. During the interval between the delivery of equipment to the site and installation, all equipment, unless otherwise specified, shall be stored in an enclosed space affording protection from weather, dust and mechanical damage and providing favorable

temperature, humidity and ventilation conditions to ensure against equipment deterioration. Manufacturer's recommendations shall be adhered to in addition to these requirements.

B. Equipment and materials to be located outdoors may be stored outdoors if protected against moisture condensation. Equipment shall be stored at least 6 inches above ground. Temporary power shall be provided to energize space heaters or other heat sources for control of moisture condensation. Space heaters or other heat sources shall be energized without disturbing the sealed enclosure.

C. Fabricated products, pipe and pipe appurtenances shall be handled, stored off the ground on blocking or skids. Pipes with paint, tape coatings, linings or the like shall be stored to protect the coating or lining from physical damage or other deterioration. Pipes shipped with interior bracing shall have the bracing removed only when recommended by the pipe manufacturer.

D. Store loose granular products in well-drained area on a solid surface to prevent mixing with foreign matter. Cover products that are subject to erosion or deterioration with plastic sheeting.

E. Store electrical, instrumentation and control products in a water-tight enclosure to protect against damage from moisture, dust and corrosion.

1.07 PROTECTION OF EQUIPMENT AFTER INSTALLATION

A. After installation, protect equipment from damage from, including but not limited to, dust, abrasive particles, debris and dirt generated by the placement, chipping, sandblasting, cutting, finishing and grinding of new or existing concrete, terrazzo and metal; and from the fumes, particulate matter, and splatter from welding, brazing and painting of new or existing piping and equipment.

B. As a minimum, vacuum cleaning, blowers with filters, protective shielding, and other dust suppression methods will be required at all times to adequately protect all equipment.

C. When sandblasting or when finishing concrete, all equipment that may be affected by cement dust shall be completely covered. Electrical switchgear, substations and motor load centers shall not be installed until after all concrete work and sandblasting in those areas have been completed and accepted and the ventilation systems installed.

D. During painting operations, all grease fittings and similar openings shall be covered to prevent the entry of paint.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 INSPECTION

A. Prior to installation, inspect materials and equipment for signs of corrosion and other effects of storage. Do not install material or equipment showing such effects.

B. Remove damaged material from the site and expedite delivery of replacement material or equipment. Delays to the Work resulting from material or equipment damage that necessitates procurement of new products will be considered delays that are within the Contractor's control.

3.02 INSTALLATION

A. Handle, install, connect, clean and adjust products in accordance with the manufacturer's instructions.

B. Fill lubricant reservoirs and grease bearings prior to starting equipment. Use lubricants recommended by the manufacturer of the equipment.

C. Recoat painted surfaces that are damaged prior to final acceptance of the Work.

END OF SECTION

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SECTION 01612

SEISMIC DESIGN CRITERIA

PART 1 - GENERAL

1.01 THE REQUIREMENT

A. All products to be furnished under this contract shall be designed, constructed, and installed in conformance with the seismic requirements contained within the 2022 California Building Code (CBC), Seismic Soil Profile Type "D", and the following seismic design parameters:

1. Design Spectral Response Acceleration for Short Period (S_{DS}) = 1.492g
2. Design Spectral Response Acceleration for 1-second Period (S_{D1}) = 0.807g
3. Seismic Use Group III
4. Seismic Design Category E
5. I_E = 1.25 for entire structure
6. I_P = 1.5 for elements of structures and equipment

1.02 RELATED WORK

A. Section 01330, Submittals

B. Section 01614, Wind Design Requirements.

C. Section 05500, Miscellaneous Metals.

1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. California Building Standards Commission (CBSC)

1. California Building Code

B. American Society of Civil Engineers (ASCE)

1. ASCE/SEI 7, Minimum Design Loads for Buildings and Other Structures

C. American Concrete Institute (ACI)

1. ACI 318, Building Code Requirements for Structural Concrete

D. International Code Council Evaluation Services (ICC-ES)

1. Manufacturer Evaluation Reports, as appropriate.

E. Network Equipment Building System (NEBS)

1. Bellcore TR-NWT-000063

F. Sheet Metal and Air Conditioning Contractors National Association (SMACNA)

1. Seismic Restraint Manual – Guidelines for Mechanical Systems

G. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.04 SUBMITTALS

A. Submit calculations and/or shop drawings, in accordance with Division 1, and shall include the following information.

B. Design Data:

1. Equipment Qualification – CONTRACTOR shall submit for review and approval (if required). Structural seismic qualification of the equipment to demonstrate that it is capable of withstanding forces as specified.

2. Anchorage System – CONTRACTOR shall submit for review and approval. Structural calculations, of the proposed anchorage system, certified by a Professional Civil or Structural Engineer licensed within the State of California.

C. Certification:

1. Certification from equipment manufacturer stating that equipment is either "Pre-qualified Structurally and Functionally Rugged" or "Pre-qualified Structurally Rugged," as applicable.

1.05 EQUIPMENT CLASSIFICATION

A. Class I – Pre-qualified Structurally and Functionally Rugged:

1. Equipment defined as Class I is expected to remain operable, or be capable of immediate restoration to service following a Design Basis Earthquake (DBE).

2. Class I equipment, which is not pre-qualified as structurally and functionally rugged shall be subject to functional seismic qualification. Functional seismic qualification shall consist of prototype shake table testing in accordance with the requirements of TR-NWT-000063.

3. Ground motion time histories used, as the basis of shake table qualification testing shall produce a response spectrum, which envelops the site-specific response spectrum for the project.

B. Class II – Pre-qualified Structurally Rugged:

1. Equipment designated as Class II need not remain functional through a Design Basis Earthquake or even be capable of immediate restoration to service. Nevertheless, such equipment shall be able to resist damage adequately to permit repair and return to service within a short period of time, following a DBE.

2. Class II equipment which is not pre-qualified as "structurally and functionally rugged" or as "structurally rugged" shall be subject to structural seismic qualification. Structural seismic qualification shall consist of submittal of specific structural engineering analysis of the design and interconnection of all parts and portions of the equipment to demonstrate that it is capable of withstanding forces as specified. Calculations shall be sealed by a Civil or Structural Engineer licensed within the State of California.

1.06 FIXTURE AND EQUIPMENT ANCHORAGE

A. Anchorage and other supports for all important equipment shall be designed to resist seismic forces occurring at each of the three principal directions separately as well as simultaneously. When combining seismic forces in the orthogonal directions simultaneously, the combination of 100-percent F_{h1}, plus 30-percent F_{h2}, plus 30-percent of F_v shall be used. Where inclusion of vertical loads results in a less conservative design, vertical effects shall be neglected. Alternatively, the orthogonal effects may be combined on a square-root-of-the-sum-of-the-squares (SRSS) basis, using 100-percent of the forces in three directions.

B. Structural design of equipment anchorage will be submitted for pre-qualified structurally rugged equipment. Calculations shall be sealed by a Civil or Structural Engineer licensed within the State of California.

C. Equipment, which is not pre-qualified as structurally rugged, will be subject to structural seismic qualification. Structural seismic qualification will consist of submittal of specific structural engineering analysis of the design and interconnection of all parts, portions and anchorage of the equipment to demonstrate that it is capable of withstanding forces resulting from a Design Basis Earthquake. Calculations shall be sealed by a Civil or Structural Engineer licensed within the State of California.

D. Architectural elements (racks, shelving, cladding, windows, doors, non-engineered partition walls, parapets, ornamentation, gutters and downspouts, etc.) mechanical and electrical components, equipment housings and their attachments, supporting structures, and anchorage:

1. Shall be designed and constructed to resist the seismic forces in accordance with Chapter 16 of the CBC. This force shall be considered acting at the center of gravity of the piece under consideration. No equipment shall be anchored to vertical structural elements without written approval of the ENGINEER.

2. Component Amplification Factor (ap) equal to 2.5 for nonbuilding structures with flexible dynamic characteristics or ap = 1.0 for nonbuilding structures with rigid dynamic characteristics.

3. Equipment shall be designed for a vertical seismic component equivalent to 2/3 the horizontal seismic component.

4. Vibration isolated equipment shall be provided with snubbers capable of retaining the equipment in its designated location without any material failure or deformation of the snubbers when exposed to a vertical or horizontal force at the contact surface equal to 100 percent of the operating weight of the equipment. Air gaps between retainer and equipment shall not exceed 1/4-inch.

5. Piping with flexible connection and/or expansion joints shall be anchored such that the intended uses of these joints are maintained in the piping system.

6. Calculations and shop drawings shall be submitted for all anchorage details. All calculations shall be made and signed by a Professional Civil or Structural Engineer licensed in the State of California. Inasmuch as all anchorage of equipment is to be made of poured-in-place concrete elements, it is imperative that types of anchorage be coordinated with the concrete contractor so that anchorage may be installed at time of concrete placement. If calculations and anchorage details are not submitted prior to placing concrete, the CONTRACTOR will become responsible for any strengthening of concrete elements because of superimposed seismic loading.

E. Cast-in anchor bolts are preferred for support of critical equipment and framing. Drilled-in expansion anchors will not be used, without approval from the ENGINEER, for critical fastening such as extreme vibratory conditions, impact loads, seismic connections, and overhead installations.

F. Expansion and adhesive anchors will have an associated research report issued by The International Code Council Evaluation Service, Inc. (ICC-ES). Design values and installation requirements for anchors will be as presented in the appropriate ICC-ES and/or Legacy report(s). Edge distance, bolt spacing, inspection requirements and operating temperatures will be considered when determining the appropriate allowable design values.

1.07 VIBRATION ISOLATION

A. In general, equipment should be rigidly mounted to supporting foundations and structures, without the aid of vibration isolation devices. Exceptions are mechanical equipment in which vibrations transmitted from the equipment would be troubling to building occupants and/or other equipment within the building.

B. If vibration isolation mountings are required for equipment. The mountings, and their attachments to the supporting structure, shall be designed as flexible mountings in accordance with governing Code. The supplier of the vibration isolation mounting hardware shall be required to submit certified calculations, sealed by a Civil or Structural Engineer licensed within the State of California. Indicating the adequacy of the hardware and attachment anchorage to meet these criteria.

1.08 ABOVE GROUND PIPING

A. Steel piping shall as a minimum, be provided with braces that satisfy the latest edition of SMACNA requirements for Seismic Hazard Level A unless demonstrated to the satisfaction of the OWNER that it is capable of resisting the required seismic forces under other support conditions. Connection Level I shall be used for all piping.

B. Plastic piping shall be braced laterally at intervals not exceeding twice that recommended by the manufacturer for vertical support.

C. Piping crossing expansion joints between adjacent structures shall be provided with expansion fittings, multiple bends, or other suitable provisions to ensure capacity to sustain expected differential movement between structures.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

A. All equipment designed to be fixed in position shall be securely fastened in place in conformance with the CBC, ASCE 7, or as specified herein the Technical Specifications for a specific piece of equipment under Division 2 through 16. For other equipment, the equipment manufacturer shall provide recommended anchorage information to the CONTRACTOR for use in the installation of the equipment.

B. See also Section 01614 for Wind Design Requirements.

3.02 STRUCTURAL INTEGRITY AND ANCHORAGE

A. It shall be the responsibility of the equipment manufacturer/supplier to provide the engineering anchorage calculations and figures to the CONTRACTOR for submission to the ENGINEER. As a minimum, the equipment manufacturer/supplier shall determine the number, dimensions, material, location, embedment and installation conditions of all anchor bolts to be set in concrete in accordance with Contract Specifications and Drawings. At the option of the CONTRACTOR, the CONTRACTOR or equipment manufacturer/supplier shall furnish the anchor bolts and associated hardware as specified herein and as determined by the manufacturer/supplier's engineering anchorage calculations for installation by the CONTRACTOR.

B. Engineering anchorage calculations and figures shall be prepared, stamped and signed by a Professional Civil or Structural Engineer licensed in the State of California. Calculations shall include the following steps as a minimum:

1. Determination of the operating equipment weight and centroid of the equipment.

2. Determination of the shear and overturning forces at each anchorage due to the force determined, as specified below, being applied at the equipment's centroid.

3. Determination of the shear and tension forces that must be developed by the anchorage at each support to resist the forces calculated.

4. Selection of the anchorage details based upon the maximum shear and tension forces calculated above. As a minimum, details shall include number of bolts,

materials, diameter, total length, embedded length, required edge distance and bolt dimensions. The embedded length of bolts shall be suitable to develop the ultimate tensile capacity of the anchorage for ductile failure.

C. For all equipment weighing 400 pounds or more, the minimum anchor bolt size shall be 5/8-inch diameter, with 5-inch minimum embedment. The minimum anchor bolt size for all other equipment shall be 3/8-inch diameter, with 4-inch minimum embedment. All anchor bolts securing equipment to be grouted shall be furnished with leveling nuts, the faces of which shall be tightened against the flat surfaces to not less than 10 percent of the bolts safe tensile stress.

D. Cast-in-place anchor bolts shall be set before concrete has been placed and shall be carefully held in position with suitable templates of an acceptable design.

E. No equipment shall be anchored to vertical structural elements without the written approval of the ENGINEER, with the exception of pipe hangers/supports or anchorage as specified.

3.03 SEISMIC REQUIREMENTS

A. The seismic qualification for the above equipment shall be demonstrated by structural calculation(s) or engineering shake table test(s).

3.04 PROOF OF COMPLIANCE

A. As required by other sections of these Specifications, CONTRACTOR shall submit for review and acceptance, test data or structural calculations certified by a Professional Civil or Structural Engineer, licensed in the State of California, to show compliance with the above requirements.

B. Test data for similar equipment may be used subject to the approval of the ENGINEER.

C. In addition to the above requirements, where equipment with complex component structural systems, (i.e. systems involving components with multiple degrees of freedom and higher order modes of vibration), contains low weight components (e.g. circuit boards, relays, or solenoids), an additional empirical evaluation for such low weight components shall be certified in writing by a Professional Civil or Structural Engineer, licensed in the State of California, to satisfy the requirements set forth above. At a minimum, such certification shall be based on an empirical evaluation of direct observation of such equipment as part of the factory or shop witness testing including physical “hand” shake and pull tests, and general calculations (if required to verify capacity overload) necessary to satisfy the ENGINEER of compliance with the above requirements. Certification shall be in the form of a letter from the licensed engineer incorporating the nature of the observations and/or calculations performed including the licensed engineer’s seal and signature

END OF SECTION

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SECTION 01614

WIND DESIGNS REQUIREMENTS

PART 1 - GENERAL

1.01 THE REQUIREMENT

A. All products to be furnished under this contract shall be designed, constructed, and installed in conformance with the wind design requirements contained within the 2022 California Building Code (CBC), and the following design parameters:

1. Occupancy Category, III
2. Fastest Mile Wind Speed (3 Second Gust) 99 miles per hour
3. Wind Exposure Category "C"
4. Importance Factor, I_W = 1.15

1.02 RELATED WORK

A. Section 01330, Submittals

B. Section 01612, Seismic Design Requirements.

C. Section 05500, Miscellaneous Metals.

1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. California Building Standards Commission (CBSC)

1. California Building Code

B. American Society of Civil Engineers (ASCE)

1. ASCE/SEI 7, Minimum Design Loads for Buildings and Other Structures

C. American Concrete Institute (ACI)

1. ACI 318, Building Code Requirements for Structural Concrete

D. International Code Council Evaluation Services (ICC-ES)

1. Manufacturer Evaluation Reports, as appropriate.

E. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.04 SUBMITTALS

A. Submit calculations and/or shop drawings, in accordance with Division 1, and shall include the following information:

B. Design Data:

1. Anchorage System – CONTRACTOR shall submit for review and approval. Structural calculations, of the proposed anchorage system, certified by a Professional Civil or Structural Engineer licensed within the State of California.

1.05 FIXTURE AND EQUIPMENT ANCHORAGE

A. Anchorage and other supports for all important equipment shall be designed to resist wind forces occurring along each of the three principal directions.

B. Architectural elements (racks, shelving, cladding, windows, doors, non-engineered partition walls, parapets, ornamentation, gutters and downspouts, etc.) mechanical and electrical components, equipment housings and their attachments, supporting structures, and anchorage:

1. Calculations and shop drawings shall be submitted for all anchorage details. All calculations shall be made and signed by a Professional Civil/Structural Engineer licensed in the State of California. Inasmuch as all anchorage of equipment is to be made of poured-in-place concrete elements, it is imperative that types of anchorage be coordinated with the concrete contractor so that anchorage may be installed at time of concrete placement. If calculations and anchorage details are not submitted prior to placing concrete, the CONTRACTOR will become responsible for any strengthening of concrete elements because of superimposed wind loading.

C. Cast-in anchor bolts are preferred for support of critical equipment and framing. Drilled-in expansion anchors will not be used, without approval from the ENGINEER

D. Expansion and adhesive anchors will have an associated research report issued by The International Code Council Evaluation Service, Inc. (ICC-ES). Design values and installation requirements for anchors will be as presented in the appropriate ICC-ES and/or Legacy report(s). Edge distance, bolt spacing, inspection requirements and operating temperatures will be considered when determining the appropriate allowable design values.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

A. All equipment designed to be fixed in position shall be securely fastened in place in conformance with the CBC, ASCE 7, or as specified herein the Technical Specifications for a specific piece of equipment under Division 2 through 16. For other equipment, the equipment manufacturer shall provide recommended anchorage information to the CONTRACTOR for use in the installation of the equipment.

B. See also Section 01612 for Seismic Design Requirements.

3.02 STRUCTURAL INTEGRITY AND ANCHORAGE

A. It shall be the responsibility of the equipment manufacturer/supplier to provide the engineering anchorage calculations and figures to the CONTRACTOR for submission to the ENGINEER. As a minimum, the equipment manufacturer/supplier shall determine the number, dimensions, material, location, embedment and installation conditions of all anchor bolts to be set in concrete in accordance with Contract Specifications and Drawings. At the option of the CONTRACTOR, the CONTRACTOR or equipment manufacturer/supplier shall furnish the anchor bolts and associated hardware as specified herein and as determined by the manufacturer/supplier's engineering anchorage calculations for installation by the CONTRACTOR.

B. Engineering anchorage calculations and figures shall be prepared, stamped and signed by a Professional Civil or Structural Engineer licensed in the State of California. Calculations shall include the following steps as a minimum:

1. Determination of the shear and overturning forces at each anchorage due to the force determined, as specified below, being applied.

2. Determination of the shear and tension forces that must be developed by the anchorage at each support to resist the forces calculated.

3. Selection of the anchorage details based upon the maximum shear and tension forces calculated above. As a minimum, details shall include number of bolts, materials, diameter, total length, embedded length, required edge distance and bolt dimensions. The embedded length of bolts shall be suitable to develop the ultimate tensile capacity of the anchorage for ductile failure.

C. Cast-in-place anchor bolts shall be set before concrete has been placed and shall be carefully held in position with suitable templates of an acceptable design.

D. No equipment shall be anchored to vertical structural elements without the written approval of the ENGINEER, with the exception of pipe hangers/supports or anchorage as specified.

END OF SECTION

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SECTION 01740

CLEANING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Intermediate and final cleaning of Work not including special cleaning of closed systems specified elsewhere.

1.02 STORAGE AND HANDLING

A. Store cleaning products and cleaning wastes in containers specifically designed for those materials.

1.03 SCHEDULING

A. Schedule cleaning operations so that dust and other contaminants disturbed by cleaning process will not fall on newly painted surfaces.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Cleaning Agents

1. Compatible with surface being cleaned.
2. New and uncontaminated.
3. For Manufactured Surfaces: Material recommended by manufacturer.

PART 3 - EXECUTION

3.01 GENERAL

A. Prevent accumulation of wastes that create hazardous conditions.

B. Conduct cleaning and disposal operations to comply with laws and safety orders of governing authorities.

C. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains or sewers.

D. Dispose of degradable debris at an approved solid waste disposal site.

E. Dispose of non-degradable debris at an approved solid waste disposal site or in an alternate manner approved by Engineer and regulatory agencies.

F. Handle materials in a controlled manner with as few handlings as possible.

G. Do not drop or throw materials from heights greater than 4-feet or less if conditions warrant greater care.

H. On completion of work, leave area in a clean, natural looking condition. Remove all signs of temporary construction and activities incidental to construction of required permanent Work.

I. Do not burn on-site.

3.02 INTERIOR CLEANING

A. Cleaning During Construction

1. Keep work areas clean so as not to hinder health, safety or convenience of personnel in existing facility operations.
2. At maximum weekly intervals, dispose of waste materials, debris, and rubbish.
3. Vacuum clean interior areas when ready to receive finish painting. Continue vacuum cleaning on an as-needed basis, until final cleaning.

B. Final Cleaning

1. Complete immediately prior to Final Inspection.
2. Remove grease, mastic, adhesives, dust, dirt, stains, fingerprints, labels, and other foreign materials from sight-exposed surfaces.
3. Wipe all lighting fixture reflectors, lenses, lamps and trims clean.
4. Wash and shine glazing and mirrors.
5. Polish glossy surfaces to a clear shine.
6. Ventilating systems
    a. Clean permanent filters and replace disposable filters if units were operated during construction.
    b. Clean ducts, blowers and coils if units were operated without filters during construction.
7. Replace all burned out lamps.
8. Broom clean process area floors.
9. Mop office and control room floors.

3.03 EXTERIOR SITE CLEANING

A. Cleaning During Construction

1. Construction debris
    a. Confine in strategically located container(s):
        1) Cover to prevent blowing by wind.
        2) Haul from site minimum once a week.
    b. Remove from work area to container daily.
2. Vegetation
    a. Keep weeds and other vegetation trimmed to 3-inch maximum height.
3. Soils, sand, and gravel deposited on paved areas and walks:
    a. Remove as required to prevent muddy or dusty conditions.
    b. Do not flush into storm sewer system.

B. Final Cleaning

1. Remove trash and debris containers from site:
    a. Re-seed areas disturbed by location of trash and debris containers.
2. Clean paved roadways.

3.04 FIELD QUALITY CONTROL

A. Immediately prior to Demonstration Period, conduct an inspection with Engineer to verify condition of all work areas.

END OF SECTION

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SECTION 01770

CONTRACT CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Administrative and procedural requirements for contract closeout.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. General Conditions
2. Section 01780 – Record Drawings
3. Section 01782 – Operation and Maintenance Information

1.03 FINAL CLEANING

A. Immediately prior to submittal of a request for inspection for Substantial Completion, clean the project site and make ready for Owner's use and occupancy.

B. Employ experienced workers or professional cleaners for final cleaning.

C. Complete the following cleaning operations:

1. Clean the project site, yard and grounds which were disturbed by construction activities. Remove rubbish, waste material, litter and other foreign material.
2. Sweep paved areas, remove oil stains, grease, dust and dirt.
3. Remove tools, construction equipment, machinery, storage sheds, temporary fences and surplus material.
4. Broom clean sidewalks and concrete floors.
5. Vacuum carpets, spot clean or if necessary, shampoo to remove visible soil or stains.
6. Clean glass in doors and windows, remove glazing compounds, replace chipped and broken glass, clean door and window frames.
7. Patch, touch up and repair marred surfaces and finishes. Replace finishes and surfaces that cannot be satisfactorily repaired or restored.
8. Wipe surfaces of mechanical and electrical equipment, remove excess lubrication, paint splatter and mortar droppings.
9. Clean plumbing fixtures and mirrors.
10. Clean light fixtures, lamps and bulbs. Replace burned-out bulbs and defective or noisy starters in fluorescent and mercury vapor fixtures.

1.04 SUBSTANTIAL COMPLETION

A. General:

1. Comply with procedural requirements for Substantial Completion as specified in the General Conditions.

B. Complete final cleaning operations before requesting inspection for Substantial Completion.

C. Prior to requesting inspection for Substantial Completion, complete and submit the following:

1. List of items to be completed or corrected (punch list). Organize list by facility, space, system and piece of equipment.

2. Specific warranties, bonds, maintenance service agreements, final certifications and similar documents.

3. Delivery of spare parts, special tools, extra materials and similar items to designated locations.

4. Make final changeover of permanent locks and deliver keys to Owner.

D. Inspection for Substantial Completion:

1. Engineer, Owner and Contractor shall jointly walk through and inspect the project site to determine whether the Work is satisfactory and Substantially Complete.

2. The Contractor's punch list will be reviewed and additional items identified during the inspection requiring corrective actions will be added to the list as determined by the inspection.

3. Once Substantial Completion has been achieved, Engineer will prepare a Certificate of Substantial Completion.

1.05 FINAL COMPLETION

A. Final Completion Submittals:

1. Prior to submitting final Application for Payment, complete and submit the following:

a. Project Record Drawings. Refer to Section 01780.

b. Guaranty and Warranties.

c. Operation and Maintenance Information. Refer to Section 01782.

d. Punch List with all corrective actions completed and ready for Final Inspection.

e. Releases from Agreements with property owners or public agencies.

f. Releases or Waivers of Liens and Claims.

g. Evidence of final, continuing insurance coverage complying with insurance requirements.

h. Consent of Surety to Final Payment.

B. Final Inspection:

1. Submit written request for final inspection for Project Acceptance.

2. Engineer will either proceed with the inspection or advise Contractor of unfulfilled requirements.

3. Engineer will prepare a Certificate of Final Completion after satisfactory inspection of the Work.

1.06 FINAL APPLICATION FOR PAYMENT

A. Following a satisfactory Final Inspection and receipt of a signed Certificate of Final Completion from the Engineer, submit the final Application for Payment in accordance with the procedures and requirements specified in the General Conditions.

END OF SECTION

SECTION 01780

RECORD DRAWINGS

PART 1 - GENERAL

1.01 SUMMARY

A. Record Drawings are documents maintained and annotated by the Contractor during construction to illustrate the final location of piping, equipment, electrical conduits, outlet boxes and cables.

B. Record changes or deviations that vary from the details indicated on the original Contract Documents. Identify buried or concealed construction and utility features that are revealed during the course of construction. Record the horizontal and vertical location of buried utilities that differ from the locations indicated, or which were not indicated on the Contract Documents.

C. When the configuration and arrangement of the Work is changed from that indicated on the Contract Drawings or specified in the Project Manual, the authorizing document for the change, such as a Request for Information, Change Order, Shop Drawing, or Field Order, shall be clearly referenced on the Record Drawings as a comment.

D. Supplement the Record Drawings with detailed layout sketches, schedules, installation drawings and fabrication drawings.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 RECORD DRAWINGS

A. Record Drawings shall be full-size and maintained in a clean and legible condition. Engineer will provide one set of full-size Drawings for use as a Record Drawing set.

B. Do not use the Record Drawing set for construction purposes.

C. At the completion of the work, but prior to final payment, submit the Record Drawing set to the Engineer.

D. Marking of the drawings shall be kept current and shall be done at the time the material and equipment are installed.

E. Annotations to the Record Drawings shall be legible and shall be made with an erasable colored pencil conforming to the following color code:

1. Additions and Final Dimensions – Red
2. Deletions – Green
3. Comments – Blue

F. Engineer will review the Contractor's updated Record Drawing mark-ups on a monthly basis during the evaluation of each progress payment.

1. Progress payment approval is contingent upon complete and up-to-date Record Drawing mark-ups.
2. Payment approval will be delayed if mark-up drawings are not up-to-date.

END OF SECTION

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SECTION 01782

OPERATION AND MAINTENANCE INFORMATION

PART 1 - GENERAL

1.01 GENERAL

A. O&M information shall be provided for each maintainable piece of equipment, equipment assembly or subassembly, and material provided or modified under this Contract.

B. Contractor shall be responsible for:

1. Compiling product data and related information appropriate for the Owner's operation and maintenance of products furnished under the Contract.

2. Preparing operating and maintenance data as specified in this Section and as referenced in other pertinent Sections of specifications for products furnished under the Contract.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 01330 – Submittals

1.03 SUBMITTALS

A. Submit in accordance with Section 01330.

B. Submit 2 manuals for review for each piece of equipment or system. Engineer and Owner will review the manuals and both will be returned to the Contractor. Make additions and revisions in accordance with the review comments and submit 4 final O&M Manuals.

C. O&M Manuals must be submitted and accepted before on-site training may start.

D. If the manufacturer's standard brochures and manuals are used to describe O&M procedures, modify or annotate these published documents to identify only the model or series of equipment installed on the project. Neatly cross out, eliminate or otherwise annotate extraneous material.

E. Submittals that are not fully indexed and tabbed with sequentially numbered pages shall be returned without review.

F. Provide two sets of CDs containing all AutoCAD as-built electrical and instrumentation drawings prepared for this project.

PART 2 - PRODUCTS

2.01 GENERAL

A. Operation and maintenance data shall be provided in the form of an instructional manual for use by Owner's personnel.

B. Format

1. Size: 8½-inch by 11-inch. (except drawings)

2. Text

a. Manufacturer's printed data properly edited for project. Cross out all data that does not apply to the equipment to be furnished.

b. All documents shall be machine typed; hand written documents are not acceptable. All documents shall be legible and original size, documents that cannot be read or have been reduced will be returned for correction.

3. Drawings

a. Provide drawings in a separate reinforced punched binder tab-bind in with text.

b. Drawings larger than 11-inch by 17-inch shall be placed in an 8½-inch by 11-inch envelopes bound in text.

c. Drawings shall be suitably identified on the Drawings binder.

d. Drawings shall be referenced in text.

4. Binders: Commercial quality, permanent, all white in color, three-ring, durable, cleanable plastic covers with inserts, insertable full height and width, front, back, and spine, with full-page sheet lifters. Size of binder shall be appropriate for the quantity of material it will contain.

5. Indexing: The manuals shall be fully indexed by use of side tabs.

6. All of these sets of O & M manuals shall be made up of "original" (no copies or reproductions) documents. No photo or fax copies are allowed of standard published manuals available from manufacturers.

2.02 CONTENTS OF MANUAL

A. Presentation of Data

1. Include only those sheets that are pertinent to the specific product.

2. Annotate each sheet to:

a. Clearly identify the specific project or part installed.

b. Clearly identify the data applicable to the installation.

c. Cross-out references to inapplicable information.

B. Drawings

1. Supplement product data with Drawings as necessary to clearly illustrate:

a. Relations of component parts of equipment and systems. Include individual parts list with exploded views for all equipment.

b. Control and flow diagrams.

2. Electrical/instrumentation coordinate drawings with information in project contract documents to assure correct illustration of completed installation.

3. “As Constructed” set of submittal shop documents, data sheets, and drawings, including all items in the electrical/instrumentation system as specified in Division 16. Contract documents shall not be used as “As Constructed” drawings.

C. Written text as required to supplement product data for the particular installation:

1. Organize in a consistent format under separate headings for different procedures.

2. Provide a logical sequence of instructions for each procedure.

D. Provide the index and information layout in the operation and maintenance manual for each unit of equipment, and system, including electrical, and electronic items as follows:

1. Cover sheet including the following:

a. Volume __ of X.

b. Operation and Maintenance Manual.

c. Project title.

d. Owner project number.

e. Manufacturer: Name, addresses, and telephone numbers of the manufacturer and the nearest representative of the manufacturer.

f. Date.

2. Document Index: Neatly typewritten document index for each volume, arranged as indicated in Appendix “A”. Master Table of Contents shall be placed in Volume 1 itemizing all of the information included in the O&Ms and the corresponding volume location of that information.

3. Equipment Record Sheet for Electrical/Instrumentation Equipment

   a. Equipment record sheet for electrical/instrumentation equipment as specified in Division 16.

   b. A complete list of items supplied, including serial numbers, ranges, options, and other pertinent data necessary for ordering replacement parts.

   c. Name and location of nearest parts supplier for all equipment.

4. Theory of Operation.

5. Description: Provide description of units and components parts function, normal operating characteristics, and limiting conditions.

   a. Include general descriptive bulletins, brochures, or catalog sheets to describe the equipment.

   b. Performance curves, engineering data, and tests.

6. Operating Instructions: Complete, detailed, written description of the sequence of operating sequence for all control system and operations in all modes. The description shall be specifically prepared for this work, and shall be fully referenced to control diagrams and system components:

   a. Recommended step-by-step startup, adjustment, calibration and break-in operating instructions.

   b. Routine and normal operating instructions. Include summer and winter operating instructions as applicable. Also include special operating instructions.

   c. Recommended step-by-step regulation, control, starting, and shut-down instructions.

   d. No photocopies are allowed of standard published manuals available from manufacturers.

   e. Recommended step-by-step emergency instructions. Provide emergency procedures for equipment malfunctions to permit a short period of continued operation or to shut down the equipment to prevent further damage to systems and equipment. Include emergency shutdown instructions for fire, explosion, spills, or other foreseeable contingencies. Provide guidance on emergency operations of all utility systems including valve locations and portions of systems controlled.

   f. Current and desired control settings.

7. Maintenance Instructions

   a. Provide the following lubrication data.

      1) A table showing recommended lubricants for specific temperature ranges and applications;

2) Charts with a schematic diagram of the equipment showing lubrication points, recommended types and grades of lubricants, and capacities; and

3) A lubrication schedule showing service interval frequency.

b. Detailed service, maintenance and operation instructions for each item supplied. Preventative maintenance to include routine operation, alignment, adjusting, and checking. Include illustrations, assembly drawings, and diagrams required for maintenance. Preventative maintenance procedure and schedule for all equipment over a five-year cycle.

c. Corrective maintenance to include disassembly, repair, overhaul and re-assembly.

d. Schematic diagrams of all electronic devices shall be included. A complete parts list with stock numbers shall be provided on the components that make up the assembly.

e. Special maintenance requirements particular to this system shall be clearly defined, along with special calibration and test procedures.

f. No photocopies are allowed of standard published manuals available from manufacturers.

g. Include Maintenance Program data entry forms.

8. Shipping and Installation

a. Receiving and handling.

b. Long-term storage and short-term storage.

c. Complete step-by-step installation instructions of all components.

9. Safety Procedures

a. Manufacturer's safety procedures for operating and maintaining all equipment and materials used. List personnel hazards and safety precautions.

10. Parts Identification

a. Provide identification and coverage for all parts of each component, assembly, subassembly, and accessory of the end items subject to replacement. Include special hardware requirements, such as requirement to use high-strength bolts and nuts. Identify parts by make, model, serial number, and source of supply to allow reordering without further identification. Provide clear and legible illustrations, drawings, and exploded views to enable easy identification of the items. When illustrations omit the part numbers and description, both the illustrations and separate listing shall show the index, reference, or key number which will cross-reference the illustrated part to the listed part. Parts shown in the listings shall be grouped by components, assemblies, and subassemblies.

11. List of recommended spare parts:

a. Original manufacturer's parts list with manufacturer's current prices. Include complete nomenclature and commercial numbers of replaceable parts.

b. Predicted life of parts subject to warranty.

c. Items recommended to be stocked as spare parts.

d. Complete nomenclature and commercial number of all replaceable parts.

12. Testing Equipment and Special Tool Information

    a. Provide information on test equipment required to perform specified tests and on special tools needed for the operation, maintenance, and repair of components.

13. Test Data

    a. Include all test data and forms from factory and field testing.

14. Troubleshooting instructions.

15. Equipment catalogue sheets and submittals.

    a. Include copy of all approved submittals.

16. Electrical and Instrumentation Drawings

    a. Electrical & Instrumentation Drawings shall include as-built information per Division 16 for the project. As-built drawings shall be signed and stamped by an electrical engineer registered in the State of California.

17. Complete software ladder logic printouts.

18. Record of all settings or parameters for all programmable devices.

19. At the end of the project these manuals shall be updated to show “as-built” or “as-installed” conditions.

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01810

FACILITY START-UP AND COMMISSIONING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Project requirements for Start-up and Commissioning

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 01600 – Materials and Equipment
2. Section 01820 – Training

1.03 DEFINITIONS

A. Start-up: The initial operation of the facility and/or plant, utilizing wastewater and related substances (sludge, methane, scum), or other media which the facility has been designed to process.

B. Commissioning: A confirmation that equipment, systems and facilities operate in accordance with the design intent and satisfy the detailed requirements of the technical specifications. The duration of the commissioning period shall be not less than 7 consecutive days.

1.04 SERVICES OF MANUFACTURER

A. Manufacturer's services for inspection, physical checkout, field adjustment, field testing, and start-up shall comply with the requirements of this Section, the requirements of the particular equipment or product technical specifications contained in Divisions 2 through 17, and the requirements of Section 01600.

B. Manufacturer's services for training and instruction of the Owner’s personnel shall comply with the requirements of the particular equipment or product technical specifications contained in Divisions 2 through 17 and Section 01820.

1.05 ROLES AND RESPONSIBILITIES

A. Contractor’s Responsibilities

1. Review specific start-up plan(s) provided by the Engineer in order to:
    a. Schedule and coordinate with the Engineer for start-up of equipment and systems.
    b. Review procedures for facility start-up.
2. Review preliminary punch list items with the Engineer 15 days prior to the scheduled start-up; and complete, correct, or resolve at the option of the Engineer, any items which impact or interfere with the facility start-up.
3. Attend meetings related to the review of start-up plan(s).
4. Clarify submittals, testing requirements, schedules, or other items related to the start-up of the equipment and facilities specified and indicated in the Contract Documents.

5. Provide all start-up materials and operating supplies for 30 operating days. Supplies include lubricants, chemicals, gases, and specialized fluids to maintain operation for 30 days.

6. Provide Manufacturer's authorized representatives as required to supervise placing equipment or systems in operation and to provide guidance during the start-up period.

7. Provide to the Engineer a list of 24 hour, "on call" representative supervisory persons who will monitor the facility start-up, and serve as a liaison for the Engineer.

8. Provide the necessary craft or labor assistance full time during the day shift and as required at other times in the event of an emergency requiring immediate attention. An emergency is defined as a failure which precludes the further operation of a critical segment of the Work. The response time shall be not less than four hours from the time of notification.

9. Correct all failures or equipment problems identified during start-up. Repairs deemed the responsibility of the Contractor shall be made at no additional cost to the Owner.

B. The responsibilities of the Owner’s O&M staff during the 7-day facility start-up period include the following:

1. Provide staff to operate equipment, systems, and facilities requiring start-up.

2. Provide all utilities including power, natural gas, and water.

C. The Engineer’s responsibilities for the facility start-up period include the following:

1. Coordinate the Contractor’s start-up activities with plant operations staff.

2. Verify the results of performance tests and any retesting.

3. Direct the Contractor to repair defective workmanship, materials, and equipment.

1.06 COMMISSIONING

A. The Owner’s Operations and Maintenance staff will initiate the commissioning period and will operate the facility throughout the duration of the commissioning period. All equipment must operate properly and continuously 24 hours per day for the test period. If any item malfunctions during the test, the item shall be repaired and the test restarted at day zero with no credit given for the operating time before the malfunction.

B. The purpose of this 7-day operational demonstration is to:

1. Provide the environment by which the Owner’s O&M staff can place equipment and systems into service.

2. Expose flaws or defects in workmanship, equipment, or materials, not previously discovered that are the responsibility of the Contractor to repair, correct, modify, or replace prior to Final Acceptance.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01820

TRAINING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Requirements for training the Owner's personnel, by persons retained by the Contractor specifically for the purpose, in the proper operation and maintenance of the equipment and systems installed under this Contract.

B. Coordinate with the equipment suppliers for all training activities and provide additional labor, services, and materials as required to complete training.

1.02 REFERENCED SECTIONS

A. The following Section is referenced in this Section

1. Section 01330 – Submittals

1.03 TRAINING SESSIONS

A. Where required by the detailed specifications, provide on-the-job training of the Owner's personnel, which will include plant operations personnel, mechanics, electricians, and electronics technicians.

B. The training sessions shall be conducted by qualified, experienced (2 years minimum), manufacturer's factory-trained representatives (not sales representatives) of the various equipment manufacturers.

C. Include instruction in both equipment operation and preventive maintenance.

D. Field training sessions shall take place at the project site. Classroom training facility will be provided at the site by the Owner.

1.04 TIMING OF TRAINING SESSIONS

A. Conduct training sessions in conjunction with the operational testing and commissioning periods.

B. Operation and maintenance manuals shall be approved and ready for distribution to the Owner's personnel at least 30 days prior to the date scheduled for the individual training session.

1.05 SUBMITTALS

A. The following information shall constitute the Contractor's training plan and be submitted to the Engineer in accordance with the provisions of Section 01330.

1. Lesson plans for each training session to be conducted by the Contractor's representatives. In addition, training manuals, handouts, visual aids, and other reference materials shall be included.

2. Date, time, and subject of each training session and identity and qualifications of individuals to be conducting the training.

3. Training schedule. Concurrent classes will not be allowed.

B. Due to phased testing and start-up activities, Contractor may prepare separate submittals for individual equipment items and systems. The materials shall be reviewed and accepted by the Engineer no later than 3 weeks prior to delivery of the training.

PART 2 - PRODUCTS

2.01 LESSON PLANS

A. Formal written lesson plans shall be prepared for each training session. Lesson plans shall contain an outline of the material to be presented along with a description of visual aids to be utilized during the session.

B. Each lesson plan shall contain a time allocation for each subject.

C. Furnish ten copies of the training manuals, handouts, and reference materials and one copy of necessary visual aids at least 1 week prior to each training session. These materials shall remain the property of the Owner and shall be suitably bound for proper organization and easy reproduction.

2.02 FORMAT AND CONTENT

A. Each training session shall be comprised of time spent both in the classroom and at the specific location of the subject equipment or system.

2.03 VIDEO RECORDING

A. The City may record, or retain the services of a commercial video taping service to record, each training session. After taping, the material may be edited and supplemented with professionally produced graphics to provide a permanent record.

PART 3 - EXECUTION

3.01 SCHEDULING TRAINING SESSIONS

A. Classes shall be scheduled so that classroom sessions are interspersed with field instruction in logical sequence. Consolidate short training sessions into combined sessions so that staff time is more efficiently used.

1. The minimum combined session length should be 1.5 to 2 hours.

a. The maximum single or combined session length shall be 4 hours.

b. Arrange to have the training conducted on consecutive days, with no more than 4 hours of classes scheduled for any one day.

c. Provide two training sessions on each system, piece of equipment, or “topic”.

B. No training sessions shall be scheduled for Mondays or Fridays. Coordinate the scheduling of training sessions with the operations superintendent.

C. The following services shall be provided for each item of equipment or system. Additional services shall be provided, where specifically required in individual specification sections.

a. At a minimum, classroom equipment training for operations personnel will include:

b. Using slides and drawings, discuss the equipment’s specific location in the plant and an operational overview.

c. Purpose and plant function of the equipment.

d. A working knowledge of the operating theory of the equipment.

e. Start-up, shutdown, normal operation, and emergency operating procedures, including a discussion on system integration and electrical interlocks, if any.

f. Identify and discuss safety items and procedures.

g. Routine preventative maintenance, including specific details on lubrication and maintenance of corrosion protection of the equipment and ancillary components.

h. Operator detection, without test instruments, of specific equipment trouble symptoms.

i. Required equipment exercise procedures and intervals.

j. Routine disassembly and assembly of equipment if applicable (as judged by the City on a case-by-case basis) for purposes such as operator inspection of equipment.

2. At a minimum, hands-on equipment training for operations personnel will include:

a. Identify location of equipment and review the purpose.

b. Identifying piping and flow options.

c. Identifying valves and their purpose.

d. Identifying instrumentation:

1) Location of primary element.

2) Location of instrument readout.

3) Discuss purpose, basic operation, and information interpretation.

e. Discuss, demonstrate, and perform standard operating procedures and round checks.

f. Discuss and perform the preventative maintenance activities.

g. Discuss and perform start-up and shutdown procedures.

h. Perform the required equipment exercise procedures.

i. Perform routine disassembly and assembly of equipment if applicable.

j. Identify and review safety items and perform safety procedures, if feasible.

3. Classroom equipment training for the maintenance and repair personnel will include:

a. Theory of operation.

b. Description and function of equipment.

c. Start-up and shutdown procedures.

d. Normal and major repair procedures.

e. Equipment inspection and troubleshooting procedures including the use of applicable test instruments and the “pass” and “no pass” test instrument readings.

f. Routine and long-term calibration procedures.

g. Safety procedures.

h. Preventive maintenance such as lubrication; normal maintenance such as belt, seal, and bearing replacement; and up to major repairs such as replacement of major equipment part(s) with the use of special tools, bridge cranes, welding jigs, etc.

4. Hands-on equipment training for maintenance and repair personnel shall include:

a. Locate and identify equipment components.

b. Review the equipment function and theory of operation.

c. Review normal repair procedures.

d. Perform start-up and shutdown procedures.

e. Review and perform the safety procedures.

f. Perform City approved practice maintenance and repair job(s), including mechanical and electrical adjustments and calibration and troubleshooting equipment problems.

g. Review and use equipment manufacturers' manuals in the hands-on training.

END OF SECTION

SECTION 01825

EQUIPMENT AND SYSTEM TESTING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Requirements for the Contractor's testing of mechanical, electrical, and instrumentation equipment and systems provided under this Contract.

B. The requirements contained in this Section supplement, but do not supersede, specific testing requirements found elsewhere in the Contract Documents.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 01330 – Submittals

2. Section 01999 – Reference Forms

1.03 COORDINATION

A. Coordinate with the equipment suppliers for functional and performance testing and facility startup. Minimum levels of on-site installation and testing assistance required of the equipment suppliers is described in separate Sections.

B. Coordinate the activities of subcontractors and equipment suppliers to implement the requirements of this Section.

1.04 SUBMITTALS

A. Prepare and submit in accordance with Section 01330.

B. Independent Testing Labs: When testing by an independent laboratory is specified, provide credentials and certifications to demonstrate capabilities.

C. Test Instruments Calibration: Certification that test instruments used in the testing procedure have been calibrated to an acceptable and recognized standard.

D. Testing Schedule: For each piece of equipment or system, provide a testing schedule and updates as appropriate. Submit at least 20 working days prior to the scheduled start of testing. Confirm the test schedule, or provide an updated schedule 4 days prior to the start of testing.

E. Testing Plan: Describe step by step procedure that will be utilized to systematically test equipment and systems.

F. Test Results:

1. Factory Test Results: Results of equipment tests performed by the equipment supplier at the point of manufacture and prior to shipping the equipment to the site.

2. Results of the Pre-Operational Test.

3. Results of the Functional Test.

4. Results of the Operational and Performance Tests.

G. Testing Form

1. Section 01999 contains a sample Instrumentation Data and Calibration Test Form showing the format and level of detail required for the documentation forms.

H. Manufacturer's Field Certification

1. Submit a Manufacturer's Installation Certification Form (Section 01999) after the manufacturer's Field Representative has completed the specified field services and testing. Submit the certification prior to Manufacturer's Representative leaving the plant site.

1.05 DOCUMENTATION REQUIREMENTS

A. Develop and implement a records keeping system to document compliance with the requirements of this Section.

B. Document date of test, equipment number or system name, nature of test (performance or operational), test objectives, test results and test instruments used during the test. Provide signature spaces for the Engineer and the Contractor.

1.06 TEST PLANS

A. Develop test plans in cooperation with the equipment suppliers detailing the coordinated, systematic testing of each item of equipment and system provided under this Contract.

B. Make test plans specific to the item of equipment or system to be tested. Identify by specific equipment or tag number each device or control station to be manipulated, observed or tested during the test procedure and the specific results to be observed or obtained.

C. Identify the responsibility of subcontractors and suppliers who will participate in the tests and list the names of manufacturers' representatives to be present during the duration of the test.

D. Provide step-by-step procedures for testing control and electrical circuits to affirm that the circuit is properly identified and connected to the proper device.

E. Undertake performance tests in a manner that will duplicate the actual operating conditions that will be encountered.

1.07 TESTING SCHEDULE

A. Prepare a testing schedule setting forth the sequence contemplated for performing the test work. Identify the contemplated start date, duration of the test and completion of each test.

1.08 TEST RESULTS

A. Test results shall be within the tolerances set forth in the detailed specification sections of the Contract Documents. If no tolerances have been specified, test results shall conform to tolerances established by recognized industry practice.

B. Retesting: If any portion of the work should fail to fulfill the Contract requirements and is adjusted, altered, renewed, or replaced, tests on that portion, together with all other portions of the work as are affected thereby, shall be repeated within reasonable time and in accordance with the specified conditions.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

A. The objective of the testing program is to demonstrate, to the Engineer's complete satisfaction, that the systems and equipment provided under this Contract meet the specified performance requirements.

B. Testing program also provides a base-line operating condition for the Owner to use in a preventative maintenance program.

C. Testing sequence consists of Pre-Operational Checkout, Functional Tests, Performance Testing and Operational Testing. These tests are required regardless of whether Factory Tests were conducted on the same piece of equipment or system.

D. Each item of mechanical, electrical, and instrumentation equipment installed under this Contract shall be tested by the Contractor to demonstrate compliance with the performance requirements of this project.

E. Provide labor, outside services, materials, test equipment and other items required to complete the specified testing and startup requirements. Furnish power, water chemicals, fuel, oil, grease and other materials needed to conduct the specified tests.

F. Install temporary valves, gauges, piping and other materials required to conduct the specified tests.

3.02 PRE-OPERATIONAL CHECKOUT

A. Pre-Operational Checkout shall be undertaken by the manufacturer's field representative.

B. Pre-Operational Checkout includes basic checks of the equipment installation prior to starting the equipment to determine if the equipment and related components have been correctly installed and is ready for starting.

C. Pre-Operational Checkout includes the following:

1. Alignment of equipment, shafts and shaft couplings, drives, belts and pulleys.
2. Filling and checking lubrication reservoirs.
3. Checking shaft seals, packing and seal lubrication system.
4. Manufacturer's recommendations for pre-start preparation.
5. Proper motor rotation
6. Circuit continuity testing, electrical testing, and instrumentation and control system testing in accordance with the requirements of Division 16.
7. Demonstrate operational controls function as intended.
8. Calibration and adjustment of electrical and instrumentation devices.

D. Verify tanks, pipes, conduits, vessels and equipment are clean and free of debris that may interfere with the testing or operation of the equipment. Remove debris prior to start of testing.

E. Following completion of the Pre-Operational Checkout, the manufacturer's field representative shall complete and sign a field certification form and submit to the Engineer.

3.03 FUNCTIONAL TESTS

A. After successful completion of the Pre-Operational Checkout, start individual items of equipment and systems and operate under simulated operating conditions to determine as nearly as possible whether the equipment and systems meet the requirements of these specifications.

B. Operate the equipment for a sufficient period of time to determine machine operating and characteristics, including noise, temperatures and vibration; to observe and document performance characteristics; and to permit initial adjustment of operating controls.

C. Obtain baseline operating data on all equipment with motors greater than 10 horsepower to include amperage draw, bearing temperatures, and vibration as required. This baseline data will be collected for the Owner to enter in their preventive maintenance system.

D. Post-Test Inspection: When Functional Tests have been completed, recheck equipment for proper alignment, unacceptably loose connections, unusual movement, or other indications of improper operating characteristics. Correct any deficiencies to the satisfaction of the Engineer.

E. Machines or devices which exhibit unusual or unacceptable operating characteristics shall be disassembled and inspected. Repair any defects found during the course of the inspection and identify and correct the cause of such defect. Replace specific parts, or the entire equipment item, to the complete satisfaction of the Engineer at no cost to the Owner.

3.04 OPERATIONAL AND PERFORMANCE TESTS

A. After successfully completing functional tests, conduct an operational test of each system to verify correct operation. During the operational test, conduct performance testing to verify that the system complies with the performance requirements contained in the individual equipment specifications.

B. Owner's operating personnel will fill process units and process systems with water and other process fluids to allow the Contractor to conduct the operational tests.

C. Upon completion of the filling operations, operate all parts of each system for a continuous, uninterrupted period of not less than 8 hours. During this period, the Contractor and shall undertake performance testing and shall monitor the characteristics of each machine according to manufacturer information and specifications and report any unusual conditions to the Engineer.

D. Undertake performance tests of mechanical, electrical, HVAC, and instrumentation equipment and systems to demonstrate and confirm compliance with the performance requirements specified in the individual equipment specifications.

E. Should the operational testing be halted for any reason related to the facilities constructed or the equipment furnished under this Contract, the operational testing program shall be repeated until the specified continuous period has been accomplished without interruption.

F. Following successful completion of the Operational Test, commissioning of the system may begin.

END OF SECTION

SECTION 01890

RESTORATION OF IMPROVEMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Restoration of work areas after installation and construction of new facilities.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 02740 Asphalt Paving

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 STRUCTURES

A. Take precautions to protect the integrity and usefulness of existing facilities.

B. If necessary, remove existing structures including curbs, gutters, pipelines, and utility poles, as necessary for the performance of the work.

1. Repair existing structures that are damaged as a result of the Work under this contract

2. Rebuild or replace the structures in as good a condition as originally found.

3.02 ROADS AND STREETS

A. Asphalt pavement that has been removed, broken, or damaged, or in which the ground has caved or settled during the work under this contract, shall be brought to original grade and section and resurfaced.

B. Before resurfacing material is placed, sawcut edges of pavement to provide clean solid vertical faces.

C. Complete pavement repair in accordance with Section 02740 and in accordance with the requirements of the affected agencies and parties.

3.03 CULTIVATED AREAS AND OTHER SURFACE IMPROVEMENTS

A. Restore cultivated or planted areas and other surface improvements damaged by construction as nearly as possible to their original condition.

B. Repair existing guard posts, barricades, and fences that are damaged.

C. Replace damaged plantings with new plantings of the same type or as acceptable to the Owner

3.04 PROTECTION OF EXISTING INSTALLATIONS

A. Immediately repair or replace existing equipment, controls, structures, or facilities which are damaged as part of the Work.

B. Take measures that are necessary to ensure that construction debris and materials are kept out of the wastewater system.

END OF SECTION

SECTION 01999

REFERENCE FORMS

The forms listed below and included in this section are referenced from other sections of the project manual. Contractor may submit equivalent forms for Owner's approval prior to use. If Owner does not approve substitute form, Contractor must use forms found in this Section. Owner will provide Contractor electronic files of prescribed forms upon request.

Referenced In Section	Title of Form
09960, 10520	Extended Warranty Form
01825	Instrumentation Data and Calibration Record Test Form
01825, 11000,	Manufacturer's Installation Certification Form
15996	Pipe Test Record Form
01330	Proposed "Or Equal" Substitution Transmittal
01330	Submittal Transmittal
01140	System Outage Request (SOR)
09960, 11241	Unit Responsibility Certificate

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EXTENDED WARRANTY FORM

(For Equipment, Material, Process)

Extended Warranty For: Product Name

Specification Section No. _____

Product Manufacturer _____

Project: _____

Location: _____

We hereby guarantee the Product Name that we have constructed for a period of # of Years (#) year(s), as specified in the Section noted above, from Date, the date of acceptance of the work/substantial completion and the assumption of occupancy and beneficial use by the Name of Owner.

The following are excluded from the provisions of this warranty:

We agree that if any of the equipment, material, or process designated for Product Name should fail due to any reason other than improper maintenance or improper operation, or should any portion of the work fail to fulfill any of the requirements of the Specifications, we will, within ten days after written notice of such defects, commence to repair or replace the same together with any other work which may be damaged or displaced in so doing.

In the event of our failure to comply with the above mentioned conditions within a reasonable time after being notified, or should exigent circumstances require repairs or replacements to be made before we can be notified or respond to notification, we do hereby authorize the Name of Owner to proceed to have the defect repaired and made good at our expense, and we will pay the cost therefor upon demand.

The warranty provided herein shall not be in lieu of, but shall be in addition to any warranties or other obligations otherwise imposed by the Contract Documents and by law.

Manufacturer:	_____	Contractor:	_____
Signed:	_____	Signed:	_____
Title:	_____	Title:	_____
Date:	_____	Date:	_____
Phone:	_____	Phone:	_____
E-mail:	_____	E-mail:	_____

INSTRUMENTATION DATA AND CALIBRATION RECORD TEST FORM

Component Description _____

Component Tag Name _____

Manufacturer		Location	
Name	_____	Site	_____
Model	_____		_____
Serial #	_____	Equip	_____

	Range	Unit
Indicator Range		
Input Range		
Output Range		

General Notes
1) Attach Calibration Curves for dp Flowmeters
2) Include mounting elevations for level Instruments
3) All entries within solid box to be typed in prior to start of test

Designed Calibration			Measured Calibration		
Input Signal	Output	Eng. Value	Input	Output	Comments

Notes:

Tested by _____ (print name)

Signature _____

Date _____

Witnessed by _____ (print name)

Signature _____

Date _____

MANUFACTURER'S INSTALLATION CERTIFICATION FORM

Contract No: _____ Specification Section: _____

Equipment Name _____

Contractor: _____

Manufacturer of Equipment Item: _____

The undersigned manufacturer of the equipment item described above hereby certifies that he has checked the installation of the equipment and that the equipment, as specified in the project manual, has been provided in accordance with the manufacturer's recommendations and that the trial operation of the equipment item has been satisfactory.

Comments:

_____

_____

_____

_____

_____ _____

Date Manufacturer

_____

Signature of
Authorized Representative

_____ _____

Date Contractor

_____

Signature of
Authorized Representative

PIPE TEST RECORD

Date: _____

Project Name: _____ **Project No.:** _____

Contractor: _____

Pipeline Size & Name	**Pipe Type**	**Pipe Location/Description**
(SL), SN, IA, etc.)	(DI, PVC, Steel, Copper, etc.)	(Attach sketch if needed)
Section Tested: From: _____ To: _____	**First Test** ☐ **Or** **Re-Test** ☐	**Length of Pipe Tested:** _____ **Ft.**

Test Specifications		**Actual Test Results**		
Type of Test:	_____	Start pressure:	_____	
Specified Test Pressure:	_____	End Pressure:	_____	
		Start time	Stop time	Duration
Duration:	_____	_____	_____	_____
Allowable loss:	_____	Actual loss:	_____	

Comments:

_____

_____

_____

_____

Test Passes	☐
Test Fails	☐

Tested By: _____
Contractor

Test Witnessed By: _____
Construction Inspector

PROPOSED "OR EQUAL" SUBSTITUTION SUBMITTAL TRANSMITTAL

Proposed "Or Equal Substitution Submittal Description

Submittal No.	
☐ 1st Submission	☐Re-Submittal
Spec Section	
Dwg/Detail No.	

Priority Level: ☐ Low ☐ Medium ☐ High ☐ **On Critical Path**

	Routing	**Date Sent**	**Date Received**
Owner:	Contractor/CM		
Project Name:	CM/Design Consultant		
	Design Consultant/CM		
Contractor:	CM/Contractor		

Proposed "Or Equal" Substitution Item or Service

A. When the first specified item is followed by a second maker's name and "or equal," the Contractor may submit Proposed Equivalent items for the Engineer's review. Proposed "Or Equal" Substitution items that are in the Engineer's judgment equal to the first specified item in quality, utility, and appearance, will be Favorably Reviewed. Where a product description and first maker's name is followed by "or equal" with no second maker's name, it means the Engineer knows of no equivalent product and the Contractor may submit Proposed Equivalent products by other makers for review. Where the term "or equal" is omitted, it means that the named item is required to meet the Owner's needs; no products or makers other than those specified will be considered.

B. This request shall include adequate technical information to fully describe the function and quality of the item. Submittals of Proposed "Or Equal" Substitution items that are not made within thirty (30) calendar days of the Notice to Proceed date will be rejected unless the Owner has agreed in writing to a later submittal date and the Contractor agrees to comply with all conditions of the Owner for the late submittal. If the Contractor's second attempt to obtain Favorable Review of a Proposed "Or Equal" Substitution item is unsuccessful, the Contractor shall submit the first specified item.

C. Inclusion of a second maker's name indicates the maker is acceptable but does not necessarily indicate the maker offers a standard product equal to the first specified item. Items by the second named maker are subject to the same conditions of review and compatibility as other Proposed "Or Equal" Substitution items. Inclusion of a maker's name and/or model number after a specification description is not a representation that the maker will furnish an item meeting the Contract requirements at bid time or at time of need. It is the Contractor's sole responsibility to furnish items meeting the Contract requirements.

D. The Engineer's review of Proposed "Or Equal" Substitution items is based solely on information provided by the Contractor and on the Contractor's warranty that the proposed item is equal in quality, utility, function and appearance to the first specified item. Favorable Review of a Proposed "Or Equal" Substitution item has the same meaning and is subject to the same limitations that apply to the Favorable Review of Product Data and Shop Drawings described in the Contract Documents.

E. Submit with proposal:

1. Description of item being proposed including the Manufacturer's model or product number.
2. Manufacturer's representation that the proposed "or equal" substitution item or service is equal to or superior to specified item in all respects.
3. Manufacturer's product data.
4. Information about several recent similar installations, including project name, owner's name, address, telephone number, and name of knowledgeable person to contact for information on performance of the product.

5. Whether a reduction in the Contract Price is being proposed. If so, provide a detailed cost breakdown substantiating the cost reduction. Consideration should be given to all extra costs and expenses necessary to make the proposed "or equal" substitution meet or exceed the all requirements found in the Contract Documents.

6. Whether a reduction in the Contract Time is being proposed. If so, provide schedule analysis substantiating the reduction in contract time and assumptions made in the schedule analysis.

7. Explain all known differences between the product specified and the Proposed "Or Equal" Substitution. Explanation to consider such items as:

   a) Does the substitution affect dimensions shown on Drawings?

   b) Are the manufacturer's guarantees and warranties on the proposed substitution items identical to those on the specified items? If there are differences, please specify each and every difference in detail.

   c) Does the proposed "or equal" substitution impact other contractors, trades or suppliers?

   d) Is the proposed "or equal" substitution compatible with all other interrelated equipment, materials and products?

   e) Any differences in Operations and Maintenance costs?

   f) Any differences in available factory authorized repair centers with regards to response times and geographic location?

   g) Will use of proposed "or equal" substitution be subject to any license fee or royalty?

   h) Are there any color or pattern differences? If so, provide color and pattern samples?

The undersigned hereby:

1. Certifies that he/she has thoroughly investigated the Proposed "Or Equal" Substitution item or service and has determined that the function/utility, appearance and quality of the Proposed "Or Equal" Substitution item or service are equivalent or superior to those of the specified item;

2. Certifies that the Proposed "Or Equal" Substitution item or service is compatible with all interrelated equipment, materials, products and services unless otherwise explained in specific detail in this submittal;

3. Agrees to coordinate installation and make all other changes that may be required for Work to be complete in all respects at no additional cost to the Owner;

4. Waives all claims for additional costs and contract time due to late ordering of the specified products or services caused by requests for "Or Equal" Substitutions that are subsequently rejected by the Engineer;

5. Represents and warrants that the Contractor is solely responsible for any extra cost or expense necessary to make the Proposed "Or Equal" Substitution item or service fully equivalent to and compatible with the Contract Documents and will meet or exceed the Engineer's design intent;

6. Agrees to compensate the Owner for all additional redesign costs associated with the Proposed "Or Equal" Substitution item or service and the cost of the Engineer's review of the Proposed "Or Equal" Substitution item or service;

7. Waives all claims for additional costs and contract time which may subsequently become apparent; and

8. Agrees to comply with all additional requirements imposed by the Owner and Engineer should the Proposed "Or Equal" Substitution item or service is approved.

Submitted by: _____

Contractor: _____

Name: _____

Signature: _____ Title: _____

Date: _____

SUBMITTAL TRANSMITTAL

Submittal Description _____

Priority Level: ☐ Low ☐ Medium ☐ High ☐ **On Critical Path**

Submittal No.	
☐ 1st Submission	☐Re-Submittal
Spec Section	
Dwg/Detail No.	

Owner:	**Routing**	**Date Sent**	**Date Received**
Project Name:	Contractor/CM		
	CM/Design Consultant		
Contractor:	Design Consultant/CM		
	CM/Contractor		

We are sending you: ☐ Attached ☐ Under separate cover via _____

☐ Submittals for review and comment

☐ Product Data for information only _____

No. Copies	**Description**	**Manufacturer**	**Reviewer Action**	**Reviewer Initials**

The Action Designated Above is in Accordance with the Following Legend:

A – No Exceptions Taken
B – Make Corrections Noted
C – Amend and Resubmit
D – Rejected
E – Review not Required

CONTRACTOR: Must certify one of the following statements pertaining to the transmittal or submittal sent for review:

☐ As the General Contractor for this project we certify that the material or equipment contained in this submittal meets all the requirements, including coordination with all related work specified (no exceptions)

☐ As the General Contractor for this project we certify that the material or equipment contained in this submittal meets all the requirements specified except for the attached deviations.

Comments:

Certified by: _____
(Contractor's Signature)

SYSTEM OUTAGE REQUEST FORM

System to be Shutdown: _____ **SOR No.:** _____

Date of Shutdown: _____ Beginning at: _____ am/pm

Duration of Shutdown: _____ Critical Path Activity? ☐ yes ☐ no

Owner:		**Routing**	**Date Sent**	**Date Received**
Project:		Contractor/CM		
Contractor:		CM/Owner-Operations		

Regulatory Agency Notification Required? ☐ yes ☐ no Is a Dry Run Required? ☐ yes ☐ no

Combustible/Hazardous Gases Present? ☐ yes ☐ no Confined Space Entry? ☐ yes ☐ no

Describe work to be performed including detailed sequence of events, safety plan, protection of existing facilities, equipment to be used and contingency plan. Use additional sheets as necessary.

Will you require assistance from Owner Operations? ☐ yes ☐ no

Note: *Existing valves and controls shall be operated by Owner staff only*

Outage Contact Information	**Name of Person on Call/Duty**	**Home Phone**	**Cell Phone**
Contractor			
Construction Manager			
Owner Operations			
Design Consultant			

Additional Contractor Comments:

CM / Owner / Design Consultant Review Action

☐ SOR Acceptable with comments noted on attached.

☐ SOR Not Acceptable with reasons noted on attached. Re-Submittal is required.

Certified by: _____ (Contractor's Signature)

_____ (Construction Manager's Signature) _____ Date

Name of Owner

CERTIFICATE OF UNIT RESPONSIBILITY
For Specification Section

Section Number and Title

In accordance with the contract documents, the undersigned manufacturer accepts unit responsibility for all components of equipment furnished under specification Section Section #***. We hereby certify that these components are compatible and comprise a functional unit suitable for the specified performance and design requirements.***

Name of Corporation

Street Address

City, State and Zip Code

By: _____
Duly Authorized Official

Notary Public

Commission Expiration Date

Name

Title

Seal:

Date: _____

END OF SECTION

SECTION 02200

SITE PREPARATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Site preparation work, as follows:

1. Locating existing facilities.
2. Installing safety and protective barriers.
3. Constructing temporary access roads, work areas and storage areas.
4. Clearing, grubbing, stripping, top soil removal and other initial work required for earthwork and trenching operations.

1.02 REFERENCED SECTIONS

A. The following Section is referenced in this Section

1. Section 01330 – Submittals

1.03 DEFINITIONS

A. Clearing: Consists of removal of natural obstructions and man-made objects and features including foundations, buildings, fences, lumber, stumps, debris, rubbish, brush, trees, boulders, and other items that interfere with construction operations or are specifically designated for removal.

B. Stripping: Includes the removal and disposal of sod, grass, weeds, roots, and other organic material remaining after clearing has been completed.

1.04 SUBMITTALS

A. Comply with Section 01330.

B. Submit:

1. Materials used and layout of temporary fences
2. Proposed staging and stockpile locations.

PART 2 - PRODUCTS

2.01 TEMPORARY FENCES

A. Type: Heavyweight, high visibility, flat laminar mesh design.

B. Material: High-density polyethylene.

C. Height: 48 inches.

D. Posts: Wood or metal posts at 10-foot spacing. Secure fence to posts with plastic cable ties.

PART 3 - EXECUTION

3.01 LOCATING EXISTING FACILITIES

A. Review the design drawings, maps, and other sources of information and identify existing facilities at the site to determine and mark the approximate locations of underground facilities.

3.02 SAFETY AND PROTECTIVE BARRIERS

A. Provide protective concrete slabs, steel plates or encasements for existing buried facilities that may be damaged by Contractor's equipment and vehicles.

3.03 PRIMARY SITE ACCESS, WORK AND STORAGE AREAS

A. Develop primary access routes, work areas and storage areas as indicated on the Drawings.

B. Clean up areas at the conclusion of the project and return the areas to their original or better condition.

3.04 CLEARING

A. Clear construction areas of objectionable items and material, which, if left in place, would interfere with the proper performance of the work.

B. Remove loose boulders within 10 feet from the tops of cut slopes. Incorporate boulders into landscaping or remove from the site.

C. Dispose of material from clearing operations in an acceptable off-site location.

3.05 STRIPPING

A. Remove the top layer of soil containing sod, grass, weeds and other vegetation to a depth of 6 inches from areas that will be affected by construction and site grading operations.

B. Extend stripped areas at least 4 feet beyond the limits of cut and fill areas.

C. Dispose of stripped material in an acceptable off-site location.

3.06 REMOVAL OF EROSION CONTROL DEVICES

A. Remove erosion control devices when bare soils are sufficiently revegetated to prevent on-site or off-site soil erosion.

B. Straw wattles containing plastic netting, including plastic specified as phot-degradable, may not remain on site. Remove entire wattle or remove and dispose of plastic netting and spread straw from wattle across vegetated areas of site.

END OF SECTION

SECTION 02221

DEMOLITION, SALVAGE AND ABANDONMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Demolition, salvage and abandonment of existing facilities.

1.02 REFERENCED SECTIONS

A. The following Section is referenced in this Section

1. Section 01330 – Submittals
2. Section 02300 – Earthwork

1.03 SUBMITTALS

A. Comply with Section 01330.

B. Description of removal procedures for careful removal of materials and equipment and the protection of facilities which are to remain undisturbed.

C. Time schedule for demolition work. Show demolition in relation to new construction, including any temporary facilities.

1.04 EXISTING CONDITIONS

A. Prior to the submittal of Bids, Contractor shall visit the site and inspect all facilities to become familiar with existing conditions and utilities.

1.05 REGULATORY REQUIREMENTS

A. Dispose of debris offsite in accordance with the requirements of agencies having jurisdiction.

B. Comply with applicable air quality control regulations.

C. Obtain necessary permits for building demolition, transportation of debris to disposal site(s) and dust control.

D. Erect appropriate safety devices to protect the general public, Owner's operations personnel, and workers from the hazards of demolition activities. Install barriers, guard rails and fences, and provide appropriate warning signs.

1.06 BURNING

A. The use of burning at the project site for the disposal of refuse, debris, and waste materials will not be permitted.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

A. The Drawings identify the major equipment and facilities to be demolished, salvaged or abandoned. Auxiliary utilities such as water, air, drainage, lubrication oil, electrical wiring, controls, and instrumentation are not necessarily shown. Remove auxiliary utilities, as well

as equipment and pipe supports and associated instrumentation devices pertaining to piping or equipment designated to be removed.

3.02 PROTECTION OF EXISTING FACILITIES

A. Before beginning any cutting, trenching, or demolition work, carefully survey the existing work and examine the Contract Documents to determine the extent of the Work.

B. Take precautions to prevent damage to facilities which are to remain in place or are to be salvaged, and be responsible for any damages to these facilities resulting from this work. Repair or replace damages to such work to return the facilities to its pre-existing condition at no additional cost to the Owner.

3.03 DEMOLITION

A. Demolish structures and equipment in an orderly and safe manner.

B. Dispose of material not identified for salvage or re-installation at a new location.

C. Minimize dust by sprinkling with water.

D. Backfill excavations caused by demolition in accordance with Section 02300.

3.04 SALVAGE

A. Carefully remove and salvage, for reuse by the Owner, the following items:

1. Three (3) existing air compressors

B. Remove salvage items in their largest pieces that can be easily handled and stored by Owner's personnel. Remove these items from their existing location and deliver them to a location designated by the Owner.

C. Remove items to be salvaged in a workmanlike manner and take the necessary precautions to prevent damage to the materials and equipment.

3.05 BURIED PIPELINES

A. Where buried pipelines are shown to be removed on the Drawings, they may be abandoned in place if there is no conflict with proposed construction and they are not located under or within 10 feet of any proposed structure.

3.06 ASBESTOS CEMENT PIPE

A. Remove and dispose of asbestos cement pipe disturbed during the performance of the Work. Remove and dispose in accordance with all Federal, State and local laws, regulations, requirements and guidelines.

B. Notify all appropriate authorities prior to performing work related to removal and disposal of asbestos cement pipe.

C. Provide landfill disposal weight records to Engineer for use as the basis of unit price payment.

D. Where necessary to connect into existing City asbestos cement potable water lines, perform work in accordance with all Federal, State and local laws, codes, requirements and guidelines.

3.07 DISPOSAL OF DEMOLISHED MATERIALS

A. Concrete, site debris, rubbish, and other materials resulting from demolition operations, as well as mechanical and electrical equipment designated to be demolished, shall be the property of the Contractor and shall be legally disposed of at the Contractor's expense.

3.08 CLEANING

A. During and upon completion of the demolition operations, promptly remove unused tools and equipment, surplus materials, rubbish, debris, and dust and shall leave work areas in a clean condition.

B. Do not sweep, grade, or flush surplus materials, rubbish, or debris into storm drains, channels, lakes, or streams.

END OF SECTION

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SECTION 02241

CONTROL OF WATER

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Control of surface water and excavation drainage.

B. Protection of the work against surface runoff, and exfiltration from existing pipes and structures.

C. Collection, treatment, and disposal of removed water.

1.02 DEFINITIONS

A. Excavation drainage includes keeping excavations free of surface water, seepage water, and exfiltration from existing pipes and structures.

B. Surface drainage includes use of temporary drainage ditches and dikes and installation of temporary culverts and sump pumps with discharge lines as required to protect the work from any source of surface water.

C. Construction Water: surface or groundwater that is subject to removal by the Contractor as necessary to complete the work.

1.03 PERMITS

A. Obtain and comply with all permits for the control and disposal of surface and groundwater

B. Pay all associated fees.

C. Obtain coverage under the North Coast Regional Water Quality Control Board Dewatering and other Low Threat Discharges to Surface Waters General Permit (Order No. R5-2013-074, NPDES No. CAG995001, if appropriate, for any dewatering activity, including removal and discharge of groundwater, accumulated rainwater and removal of water from cofferdams or diversions.

D. Comply with the conditions of the General Permit for Dewatering Activities and Caltrans BMP# NS-2 Dewatering Operations.

PART 2 - PRODUCTS

2.01 FACILITIES AND EQUIPMENT

A. Provide necessary facilities and equipment for controlling surface water and excavation drainage as necessary to complete the Work.

PART 3 - EXECUTION

3.01 SURFACE AND EXCAVATION DRAINAGE WATER CONTROL

A. Perform surface and excavation drainage water control in conformance with regulatory requirements as modified herein.

B. Have available, on hand at all times during excavation activities,

1. Sufficient pumping equipment and labor necessary to keep excavations clear of water as necessary to complete Work as specified

2. Adequate standby equipment as may be necessary to keep the control of water operation in full effect due to equipment or power failure.

C. Commence control of water at an appropriate time during excavation and continue until facilities and structures are installed and backfilled and are sufficiently protected from the effects of hydrostatic uplift or floatation.

D. Intercept surface and excavation water and divert it away from excavations through use of dikes, ditches, curb walls, pipes, sumps or other approved means. The requirement includes temporary works required to protect adjoining properties from surface drainage caused by construction operations

E. Excavations extending below groundwater levels or encountering perched groundwater.

1. Where possible, direct inflow to a sump where water can be removed by a pump within narrow trench excavations that penetrate less than a few feet below the groundwater level and do not encounter loose or cohesionless soils.

2. Provide well points, perimeter trench drains, or deep sumps as necessary to control of water within wider, deeper, and/or more extensive excavations.

3. To maintain bottom stability of wider, deeper, or more extensive excavations, draw down groundwater levels a minimum of 5 feet below the lowest portion of the excavation.

F. Control water in such a manner as to preserve the undisturbed bearing capacity of the subgrade soils at proposed bottom of excavation and protect temporary excavation slope stability during construction.

1. If foundation soils are disturbed or loosened by the upward seepage of water or an uncontrolled flow of water, excavate and replace the affected areas with drain rock on geotextile fabric at no additional cost to the Owner.

3.02 DISPOSAL OF WATER

A. Construction water may be disposed into existing sewer, subject to prior approval from the City.

B. Design and control the dewatering operations such that disposal of water does not cause erosion or other damage and such that water to be disposed of is free from silt and other objectionable materials.

C. Use settling basins and/or other means to control groundwater quality prior to discharge as necessary.

D. Follow the applicable construction activity Best Management Practices (BMP) for the project.

E. Refer to "Caltrans Storm Quality Handbooks, Construction Site Best Management Procedures Manual", May 2017 or latest edition.

3.03 TERMINATION OF DEWATERING

A. Terminate control of dewatering operations in such a manner as to maintain the undisturbed state of the natural foundation soils, prevent disturbance of compacted backfill and prevent flotation or movement of structures, pipelines, and sewers.

B. If damage occurs due to improper termination of dewatering, repair the damage to the satisfaction of the Engineer and at no additional cost to the Owner.

C. Remove control of water devices following completion of the Work requiring control of water.

END OF SECTION

SECTION 02260

EXCAVATION SUPPORT AND PROTECTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Temporary excavation support systems.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 01330 – Submittals
2. Section 02300 – Earthwork

1.03 DEFINITIONS

A. Protection Systems:

1. Sloping or benching systems for excavated slopes.
2. Structural support systems, shield systems, and other systems for preventing excavation wall failure.

1.04 SUBMITTALS

A. Prepare and submit in accordance with Section 01330.

B. Submit information as a complete package. Include all items required by the Contract Documents. Incomplete submittals will not be reviewed and will be returned for resubmittal as a complete package.

C. Shop Drawings

1. Prepared, signed and sealed by a professional engineer who is registered to practice in the state of California.
2. Clearly indicate structural sections of shoring members, welding details, bolting details and bracing details.
3. Indicate existing and new structures, pipelines and other improvements located in the vicinity and impacting the design of the shoring system.
4. Provide details for bracing, reinforcement and sealing around penetrations.

D. Calculations: Structural calculations verifying and demonstrating the structural safety and adequacy of the sheeting, shoring and bracing to be used.

1. Prepared, signed and sealed by a registered Professional Civil or Structural Engineer who is registered to practice in the State of California
2. Provide calculations for the different load, support and other conditions that occur during the sequence of installation, construction of facilities protected by the shoring and the sequence of removal of the internal bracing and shoring.

1.05 INSTALLER QUALIFICATIONS

A. Shoring installer must have a minimum of five successful past installations of shoring systems of comparable overall heights and comparable penetration of soils similar to those found on the project site.

1.06 PERFORMANCE REQUIREMENTS

A. Design and install excavation support and protection systems that are capable of:

1. Supporting excavation sidewalls and bottom to maintain the required excavation or trench section.

2. Resisting soil and hydrostatic pressure and superimposed construction loads and other live loads.

3. Protecting existing facilities in the vicinity of the excavation from damage due to settlement or movement of soil

B. Provide professional engineering services necessary to assume engineering responsibility, including preparation of Shop Drawings and a comprehensive engineering analysis by a qualified professional engineer registered in the State of California.

C. Install and remove excavation support and protection systems without damaging existing buildings, pavements, utilities, railroad facilities and other improvements adjacent to excavation.

D. Excavations

1. Protect workers from hazard of caving ground and other hazards.

2. Install excavation protection system in locations where:

a. Protection system is specifically indicated on the Drawings.

b. Excavations are equal to, or greater than, 5 feet deep.

c. Excavations are less than 5 feet deep, but there is a potential for cave-in.

d. When engineering analyses prepared by the Contractor indicate the stability of existing structures and facilities may be jeopardized by settlement or movement of soil.

1.07 GENERAL DESIGN REQUIREMENTS

A. Design excavation support systems to meet requirements and standards of the Occupational Safety and Health Administration (OSHA).

B. Design excavation support systems to meet the requirements of California Code of Regulations, Title 8 – Construction Safety Orders and California Labor Code Sections 6705 to 6707.

C. Design structural steel members in accordance with the American Institute of Steel Construction (AISC) Manual of Steel Construction Allowable Stress Design and the Uniform Building Code.

D. Excavation support systems for trench excavations shall be selected by the Contractor based on the soil conditions, depths of trench excavations, groundwater conditions and other site conditions. No attempt has been made by Engineer to define acceptable trench shoring options.

1.08 GEOTECHNICAL REPORT

A. A geotechnical report has not been prepared for this Project. Previous geotechnical reports are included for information.

1.09 JOB SITE POSTINGS

A. Maintain at least one copy of the protection system design at the job site while the excavation is open in accordance with the requirements of California Code of Regulations, Title 8 Construction Safety Orders and the California Labor Code.

1.10 SEQUENCE AND SCHEDULING

A. Do not begin excavations or installation of excavation supports until submittals for excavation support systems have been accepted by the Engineer and until materials necessary for installation are on site.

B. Allow a minimum of 15 calendar days for Engineer's review of submittals for excavation support systems.

C. Do not begin excavations or installation of excavation supports until initial survey measurements on control points on existing structures and other improvements are obtained to document initial elevations and locations.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General: Provide materials that are either new or in serviceable condition.

B. Structural Steel Soldier Beams: ASTM A36, ASTM A690 or ASTM A992.

C. Steel Sheet Piling: ASTM A328, ASTM A572 or ASTM A690; with continuous interlocks.

PART 3 - EXECUTION

3.01 PREPARATION

A. Prior to beginning installation of the excavation support system, pothole to locate existing buried utilities in the vicinity of the excavation. Survey utilities and compare actual locations to those locations indicated on the Drawings and the Shop Drawings. Determine any areas of conflict and revise the design and layout of the excavation support system to eliminate these conflicts.

3.02 SLOPING AND BENCHING OF EXCAVATED FACES

A. Where structural excavation support systems are not specifically indicated on the Drawings, sloping and benching systems for exposed faces of excavations may be utilized.

B. Construct sloping and benching systems in accordance with Section 02300.

3.03 TRENCHING SUPPORT SYSTEMS

A. Where structural excavation support systems are not specifically indicated on the Drawings, trench support systems consisting of hydraulic jacks and plates, trench shield systems, and other trench protection systems may be utilized.

3.04 INSPECTION

A. Designer of the shoring system is responsible for confirming proper installation of the shoring system. Shoring system designer, or a representative of the designer, shall make site visits to confirm installation is in accordance with the accepted shoring design.

B. Submit letter of proper installation confirming installation is in accordance with the shoring design.

3.05 REMOVAL

A. Remove excavation support and protection systems when backfill can support the remaining open excavation and bear soil and hydrostatic pressures. Remove support and protection systems in stages to avoid disturbing underlying soils or damaging structures, pavements, facilities, and utilities.

B. After removal, promptly fill voids resulting from the extraction of shoring. Repair or replace adjacent work damaged or displaced by excavation support and protection systems removal.

END OF SECTION

SECTION 02300

EARTHWORK

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Earthwork requirements for sitework, structures, roads and general earthwork, including excavation, fill, backfill, grading, and compaction; import of material; and disposal of surplus and unsuitable materials.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 01330 – Submittals
2. Section 02200 – Site Preparation
3. Section 02260 – Excavation Support and Protection
4. Section 02722 – Aggregate Base Course Material

1.03 DEFINITIONS

A. Backfill: Earthwork necessary to add fill between new structures and the excavation up to the sub or finish grade.

B. Borrow Area: Area identified from which to obtain earthwork materials.

C. Cut: Earthwork necessary to remove existing material to lower the existing grade in elevation to sub or finish grade.

D. Embankment: Materials placed to form the subgrade for roadways or site improvements.

E. Excavation: Earthwork necessary to remove existing material for the installation of structures.

F. Fill: Earthwork necessary to add material to bring the existing grade up in elevation to sub or finish grade.

G. Finish Grade: Final surface following placement of surfacing, if any, as indicated.

H. Subgrade: The surface of the earthwork on which pavement, surfacing, base, subbase, or a layer of any other material is placed.

1.04 SUBMITTALS

A. Prepare submittals and submit in accordance with Section 01330.

B. For imported materials, provide certification and source.

C. For excavations 5 feet or deeper: Submit detailed plan of all shoring, bracing, side sloping, or other provisions for worker protection against the hazard of caving ground during excavations in accordance with Section 02260.

1.05 QUALITY ASSURANCE

A. Materials and Compaction Testing.

1. Source testing of materials: Provided and paid for by Owner.
2. Field testing of compaction: Provided and paid for by Owner.

B. Compaction Testing Standards

1. In-place Density of Compacted Fill Material: Density determined in the field in accordance with ASTM D6938 – Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

2. Maximum Dry Density of Compacted Material: determined in the laboratory in accordance with Method C of ASTM D1557-12e1 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3)), or ASTM D4253 – Standard Test Methods for Maximum Index Density of Soils Using a Vibratory Table and D4254 – Standard Test Methods for Maximum Index Density of Soils and Calculation of Relative Density, for cohesionless, free draining soils.

C. Material Testing Standards:

1. Particle size analysis of soils and aggregates: ASTM D422 (2016 Version) – Standard Test Method for Particle-Size Analysis of Soils.

2. Determination of sand equivalent value: ASTM D2419 – Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.

3. Liquid limit, plastic limit, and plasticity index: ASTM D4318 – Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

4. The testing for organic matter: ASTM D2974 – Standard Test methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils.

D. References in this section to soil classification types and standards shall have the meanings and definitions indicated in ASTM D2487 – Standard Practice for Classification of Soils for Engineering Purposes. Contractor shall be bound by all applicable provisions of ASTM D2487 in the interpretation of soil classifications.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General fill, backfill, and embankment materials:

1. Selected or processed clean earth, rock, or sand, free from grass, roots, brush, other vegetation, corrosive and hazardous materials, manmade objects, and debris.

2. Materials not defined as unsuitable as indicated below, except some materials listed as unsuitable may be used, if indicated on the Drawings or when acceptable to the Engineer, when thoroughly mixed with suitable materials to form a stable composite.

3. Obtain suitable materials from one or more of the following:

a. Onsite excavations and designated borrow areas.

b. Processed on-site materials.

c. Imported from offsite borrow areas and processing plants.

d. If imported materials are required by this Section, or to meet the quantity requirements of the Project, provide the imported materials at no additional expense to Owner, unless a unit price item is included for imported materials in the Bidding Schedule.

4. Large rocky material: When embankment material consists of large rocky material, or hard lumps, such as hardpan or cemented gravel which cannot be broken down readily, distribute such material evenly throughout the embankment. Place

sufficient earth or other fine material around the larger material as it is deposited so as to fill the interstices and produce a dense, compact embankment. Do not place rocks larger than 6 inches in diameter within the upper 2 feet of the embankment subgrade.

5. Further condition fill, backfill, and embedment materials as described below or as indicated on the Drawings.

B. Levee Berm Embankment Material:

1. Lean clay, silty clay, sandy clay or gravely clay soil.
2. Plasticity index of 20 or less.
3. Liquid limit of 40 or less.
4. Complying with the grading shown in the following table:

Sieve Size	Percentage Passing
6-inch	100
4-inch	85-100
No. 200	30-100

C. Structure Backfill Material (within 12” of outside face of structure)

1. Granular, low to non-expansive soil.
2. Plasticity index 12 or less.
3. Liquid limit 30 or less.
4. Complying with the grading shown in the following table:

Sieve Size	Percentage Passing
6-inch	100
3-inch	95-100
No. 200	15-50

D. Aggregate Base Course Material: In accordance with Section 02722.

E. Crushed Rock:

1. Manufactured, angular, crushed stone with a minimum sand equivalent value of 75.
2. Clean, hard, sound, durable, uniform in quality, and free of soft, friable, thin, elongated or laminated pieces, and disintegrated material.
3. Have 100 percent of its particles with at least one fractured face on a weight basis, when tested for crushed particles per ASTM D5821.
4. Complying with the grading shown in the following table:

	Percentage Passing		
Sieve Size	1-inch	3/4-inch	1/2-inch
1-1/2-inch	100	-	-
1-inch	90-100	100	-
3/4-inch	30-60	90-100	100

	Percentage Passing		
Sieve Size	1-inch	3/4-inch	1/2-inch
1/2-inch	0-20	30-60	90-100
3/8-inch	-	0-20	20-60
No. 4	0-5	0-5	0-15
No. 8	-		0-5

F. Sand:

1. Clean, coarse, natural sand free from organic material, suitable for the purpose intended.

2. Gradation: 90 percent to 100 percent will pass a No. 4 sieve and not more than 5 percent will pass a No. 200 sieve.

G. Permeable Backfill:

1. Hard, durable, clean sand, gravel or crushed stone, free from Unsuitable Material.

2. Complying with the grading shown in the following table:

Sieve Sizes, Square Openings	Percent by Weight Passing Sieve
1-inch	100
3/4-inch	90 – 100
3/8”	40 – 100
No. 4	25 – 40
No. 8	18 – 33
No. 30	5 – 15
No. 50	0 – 7
No. 200	0 – 3

3. Durability index: Not less than 40

4. Sand equivalent: Not less than 75.

H. Impervious Material:

1. Material free of organic materials, rocks, or clods greater than 4 inches in diameter.

2. Gradation: Not less than 50 percent passing the No. 200 sieve.

2.02 UNSUITABLE MATERIALS

A. Unsuitable materials include the materials listed below:

1. Soils which, when classified under ASTM D2487, fall in the classifications of Pt, OH, CH, MH, or OL, or in a classification that contains Pt, OH, CH, MH, or OL in combination with any other letter designation, such as CH/CL.

2. Soils which cannot be compacted sufficiently to achieve the density specified for the intended use, or are unstable or pump regardless of the degree of compaction.

3. Materials that contain hazardous or designated waste materials including petroleum hydrocarbons, pesticides, heavy metals, and any material which may be classified as hazardous or toxic according to applicable regulations.

4. Soils that contain greater concentrations of chloride or sulfate ions, or have a soil resistivity or pH less than the average values for existing onsite soils.

5. Topsoil, sludge and sludge-entrained soils.

6. Rocks, stones, and boulders larger than allowed for use as fill and backfill materials.

2.03 SOURCE QUALITY CONTROL

A. Materials source testing will be performed by a testing laboratory by the Contractor.

B. Minimum Frequency of sampling:

1. Fill, backfill and embankment material generated from earthwork activities:

a. Two soil samples every [500] cubic yard of material used.

b. Two soil samples whenever the character of the soil changes.

c. One soil sample when directed by the Engineer.

d. Obtain samples that represent the predominate character of the soil that is encountered.

2. Sampling of Imported Material

a. Obtain representative samples of product from supplier.

b. After initial testing demonstrated that the proposed borrow material meets the specified requirements, obtain and test one additional sample for every [500] cubic yard of imported material.

C. Testing:

1. Test all materials used in the Work to confirm they meet the requirements indicated.

2. Prepare moisture-density curves for use in determining the optimum moisture content and in-place density of the compacted backfill.

PART 3 - EXECUTION

3.01 EXCAVATION – GENERAL

A. Excavation includes the removal of all materials of whatever nature encountered, including all obstructions of any nature.

B. Excavation shall conform to the lines and grades indicated on the Drawings.

C. Clear, grub and strip and remove top soil in construction and borrow areas in accordance with Section 02200.

D. Excavation Stability

1. Slope excavated faces or otherwise support in a safe manner in accordance with applicable State safety requirements and the requirements of OSHA Safety and Health Standards for Construction (29CFR1926) and in accordance with Section 02260.

2. Furnish, place, and maintain supports and shoring required to maintain stability of the sides of excavations.

E. Notify Engineer at least 1 working day in advance of completion of any structure excavation to allow inspection of the exposed subgrade before it is covered with backfill or with any construction materials.

F. Erosion Control:

1. Maintain earthwork surfaces true and smooth and protected from erosion.

2. Construct erosion control measures identified in the Storm Water Pollution Protection Plan prior to any clearing or grading activity.

G. Existing Underground Utilities:

1. Known existing underground utilities are generally shown on the Drawings in their approximate locations based on information of varying accuracy.

2. Exercise care to avoid damage to all existing utilities whether shown or not.

3. Conduct field explorations to locate all underground utilities in the vicinity of the Earthwork activities in accordance with Section 02200.

4. Alert the Engineer of the presence of existing utilities that are not shown on the Drawings or are in locations different than those shown on the Drawings.

H. Existing Overhead Utilities: There may be existing overhead utilities in the vicinity of the Work which may or may not be shown on the Drawings. Identify existing overhead utilities, if any, and use extreme caution when working in the vicinity of overhead utilities.

3.02 EXCAVATION FOR FILLS AND EMBANKMENTS

A. Benching and Keyways:

1. Where fill is to be placed against existing subgrade or existing grade that is sloped, excavate horizontal benches a minimum of 5feet wide and located at vertical intervals of not more than 5 feet to provide for placement and compaction of the new fill on horizontal surfaces.

2. Excavate keyway along the base of the existing slope:

a. Extend the keyway at least 3 feet into competent native soil.

b. Width of Keyway: Minimum of 15 feet.

c. Keyway Side Slopes: Inclined at approximately 0.75:1.

d. Keyway Subgrade: Scarify the upper 8-inches of the exposed surface, moisture condition and re-compact.

B. Subgrade Preparation:

1. Subgrade Beneath Embankments:

a. Expose competent native soil within the planned new embankment footprint.

b. Scarify the exposed subgrade to a depth of 8 inches, moisture condition as necessary and re-compact.

2. Subgrade Beneath Paved Areas:

a. Excavate to the subgrade soils beneath the bottom of the aggregate base or to the subbase, if such subbase is indicated.

b. Scarify the top 12 inches of subgrade soils, moisture condition as necessary, and re-compact.

c. Finished subgrade shall be even, self-draining, and in conformance with the slope of the finished pavement.

3. Subgrade Beneath Structures:

a. Excavate to the subgrade soils beneath the bottom of the structure or bottom of crushed rock layer where indicated.

b. Scarify the top 12 inches of subgrade soils, moisture condition as necessary, and re-compact.

3.03 EXCAVATION IN VICINITY OF TREES (NOT USED)

3.04 OVER-EXCAVATION NOT ORDERED OR INDICATED

A. Backfill areas over-excavated with the materials indicated for the backfill above the over-excavation or Aggregate Base.

B. Backfill the over-excavation to restore the required subgrade elevation and compact.

C. Any over-excavation carried below the grade indicated on the Drawings will be at no additional cost to Owner.

3.05 OVER-EXCAVATION WHERE ORDERED BY ENGINEER

A. Where ordered by the Engineer, over-excavate beyond the depth of subgrade indicated to the dimensions ordered.

B. Backfill areas over-excavated with the materials indicated for the backfill above the over-excavation or Aggregate Base.

C. Backfill the over-excavation to restore the required subgrade elevation.

D. Over-excavation less than 6 inches below the limits indicated: At no increase in cost to Owner.

E. Over-excavation greater than 6 inches below the limits indicated: Payment will be made under separate unit price bid items for over-excavation if such bid items have been established. Otherwise, payment will be made in accordance with a negotiated price.

F. Measurement and Payment

1. Measurement of quantities for payment of over-excavation: By calculation by Engineer of the volume of materials removed as over-excavation based on the difference between the excavation dimensions before and after the over-excavation work. No compensation will be made for removal of materials beyond the limits of the additional excavation ordered by Engineer or for materials which may come into the excavation from outside the designated limits. No compensation will be made for removal of materials that are outside of the minimum horizontal dimensions indicated.

2. Payment for over-excavation will be made by the cubic yard. The payment shall include full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in excavating and backfilling the over-excavation completely. Payment shall also include full compensation for the removal and disposal of the excavated materials, import and installation of backfill materials, control of water in the excavation, excavation support, and all costs associated with interruption of construction operations during the review of the foundations, over-excavation, backfill, and all other operations required for, or as a result of, over-excavation.

3.06 DISPOSAL OF UNSUITABLE, EXCESS EXCAVATED AND OTHER MATERIALS

A. Dispose unsuitable or excess excavated materials at an appropriate site selected by Contractor unless otherwise indicated.

B. Obtain required permits, landowner, and agency approvals for disposal of unsuitable and excess excavated materials and pay costs associated with the removal and disposal of the materials.

3.07 FILL AND EMBANKMENT CONSTRUCTION

A. Scarify foundation soils for fills and embankments bring to optimum moisture content, and re-compact with heavy compaction equipment to obtain compaction indicated.

B. Place and compact fill and embankments in horizontal layers so that when compacted layers to not exceed thickness indicated.

C. Provide keyways or benches where an embankment or fill is to be placed against slopes, hillsides, or fill slopes.

D. Slopes: Construct slopes as indicated except construct no permanent fill or embankment slopes with slope inclinations that exceed 2:1 (horizontal:vertical) unless specifically indicated otherwise

E. Over-construct fills and embankments to greater horizontal dimensions than indicated. Cut back slope following placement and compaction to expose well compacted fill.

F. Construct the first 3 feet of embankment or fills over pipelines using placement and compaction equipment that do not damage the pipe. Keep heavy construction equipment a minimum distance of the edge of the trench equal to the depth of the trench until at least 3 feet of fill over the pipe has been completed.

3.08 STRUCTURE BACKFILL

A. Provide Structure Backfill material within 12-inches of all structures to be backfilled unless otherwise indicated.

B. Place a 6-inch layer of 3/4-inch or 1-inch Crushed Rock below all structures, unless otherwise indicated.

C. Do not drop backfill upon any structure or pipe.

D. Confirm concrete structures have attained sufficient strength to withstand the backfill loads imposed.

E. Do not place backfill around water retaining structures until structures have been tested and approved for backfill. Fill structures with water during backfill operations.

F. Place backfill after all water has been removed from the excavation and the excavation sidewalls and subgrade soils have dried to a moisture content suitable for compaction.

G. Remove all loose, sloughing, or caving soils and rock materials prior to placement of backfill.

H. Place geotextile fabric as indicated.

I. Promptly after removal, fill voids created by the extraction of sheetpile or shoring indicated in Section 02260.

J. Place backfill and spread evenly in layers so that when compacted layers do not exceed thickness indicated.

K. Thoroughly mix layers as necessary to promote uniformity of material in each layer.

L. Add water to backfill material where moisture content is below the optimum moisture content and mix with the soil until the proper moisture content is achieved throughout the soil layer.

M. Where backfill material moisture content is too high to permit the specified degree of compaction, dry backfill material until moisture content is satisfactory.

3.09 COMPACTION OF FILL, BACKFILL, AND EMBANKMENT MATERIALS

A. Adjust moisture condition of soils to achieve a water content of 3 percent, plus or minus 0.5 percent, above the optimum moisture content as determined through laboratory testing of the soil.

B. Compact each layer in a uniform and systematic manner.

C. For materials with less than 10 percent passing the No. 4 sieve, compact by means of at least 2 passes from a flat plate vibratory compactor.

D. For materials with 10 percent or more passing the No. 4 sieve, mechanically compact to the indicated percentage of density each layer of backfill materials.

1. Use equipment that is consistently capable of achieving the required degree of compaction.

2. Compact each layer over its entire area while the material is at the required moisture content.

E. Do not use flooding, ponding, or jetting as a method of compaction.

F. Do not use equipment weighing more than 10,000 lbs closer to structure walls than a horizontal distance equal to the depth of the fill at the time. Use hand operated power compaction equipment where use of heavier equipment is impractical or restricted due to weight limitations.

G. Compaction Requirements:

1. Where agency or utility company requirements govern, the highest compaction standards shall apply.

2. Compact finish and subgrades in compliance with the following table:

Location or Use of Fill	Limit/Layer Thickness	Percentage of Maximum Dry Density of Compacted Material per ASTM D1557
Backfill around structures	8 in. Layers	90
Embankment Fill	12 in. Layers	90
Subgrade beneath embankments or fill areas (upper 8 inches)	Upper 12 in.	95
Subgrade beneath paved areas (upper 12 inches)	Upper 12 in.	95
Subgrade beneath structures (upper 12 inches)	Upper 12 in.	95
Subgrade beneath keyway (upper 8 inches)	Upper 8 in.	95
Finish grade in unimproved or landscape areas	Upper 12 in.	85

3.10 FIELD QUALITY CONTROL AND TESTING

A. Field quality control testing for compaction confirmation will be done by a testing laboratory of the Owner's choice at the Owner's expense except as indicated below.

B. If requested by the Owner, remove soil above the level at which the Owner wishes to test. Backfill and re-compact material after testing is completed.

C. If compaction fails to meet specified requirements, perform remedial work by one of the following methods:

1. Remove and replace backfill at proper density.

2. Bring density up to specified level by other means acceptable to Owner.

3. Retesting:

a. Costs for conducting additional tests to confirm and verify that remedial work has brought compaction within specified requirements shall be borne by the Contractor.

b. Conduct compaction tests at twice as frequently specified for the initial confirmation tests.

D. Where soil compaction is specified as a percentage of maximum dry density, determine the maximum dry density at optimum moisture content by laboratory testing in accordance with Method C of ASTM D1557.

E. Where compaction of cohesionless, free draining soil is specified as a percentage of relative density, determine relative density by laboratory testing in accordance with ASTM D4253 and D4254.

F. Determine In-Place Density of Compacted Fill Material by performing field tests of soil density in accordance with ASTM D6938.

G. Frequency of Compaction Confirmation Testing at intervals not less than as follows:

1. Embankments and Fills: 2 tests every 500 cubic yards.

2. Structure Backfill: 1 test every 5 feet in elevation per 100 horizontal feet of backfill.

3.11 FINISH GRADES

A. Surface: Reasonably smooth and free of grade breaks, irregular surface changes, protrusions and other defects.

B. Restore un-improved areas back to pre-construction grades.

C. Backfill topsoil in all areas where the topsoil was removed as part of the site preparation.

D. Restore drainage swales and water courses to their pre-construction alignments and grades unless otherwise modified by the Work. Grade surface to drain away from structures. Direct drainage to collection points.

E. Provide smooth transitions to existing grades.

F. Repair and reestablish grades to required elevations and slopes due to any settlement or erosion that may occur prior to final acceptance.

G. Vertical Tolerance:

1. Subgrade under paved areas: 0.0 feet above and 0.08 feet below.

2. Subgrade under structures: 0.0 feet above and 0.08 feet below.

3. Landscaped areas: 0.1 feet above and 0.1 feet below.

4. Unimproved areas: 0.1 feet above and 0.1 feet below.

END OF SECTION

SECTION 02722

AGGREGATE BASE COURSE MATERIAL

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Aggregate base course material and placement.

1.02 DEFINITIONS

A. Completed Course: Compacted, unyielding, free from irregularities, with smooth, tight, even surface, true to grade, line, and cross-section.

B. Completed Lift: Compacted with uniform surface reasonably true to cross-section.

1.03 STANDARD SPECIFICATION

A. State of California Department of Transportation Standard Specifications (Caltrans).

1.04 SUBMITTALS

A. Product Data: Source, gradation, and testing data records for aggregate base course material previously produced by the supplier, which demonstrates compliance with the specified gradation and physical requirements.

1.05 DELIVERY, STORAGE AND HANDLING

A. Storage and Protection: Protect from segregation and excessive moisture during delivery, storage, and handling.

1.06 QUALITY ASSURANCE

A. Material and Compaction Testing

1. Source Testing of Materials: Provided and paid for by the Contractor

2. Field Testing for Compaction: Provided and paid for by the Owner

B. Compaction Testing

1. In-place Density: Density of aggregate base course material that has been placed and compacted in the field, then tested in conformance with ASTM D6938 to determine density relative to the maximum density.

2. Maximum Density: Density obtained in the laboratory when tested in accordance with ASTM D1557.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Aggregate: Clean, hard, durable particles consisting of the any combination of the following:

1. Broken stone

2. Crushed gravel

3. Natural rough surfaced gravel

4. Sand

5. Processed reclaimed asphalt concrete, portland cement concrete (PCC), lean concrete base (LCB), or cement treated base (CTB).

B. Use either 1-1/2-inch or 3/4-inch aggregate grading unless otherwise indicated. Do not change grading without authorization from the Engineer.

C. Conform to the following gradation when tested in accordance with ASTM C136:

Sieve Sizes (Square Openings)	Percent by Weight Passing Sieve 3/4" Maximum	Percent by Weight Passing Sieve 1-1/2" Maximum
2"	-	100
1-1/2"	-	90-100
1-inch	100	-
3/4-inch	90-100	50-85
No. 4	35-60	25-45
No. 30	10—30	10-25
No. 200	2-9	2-9

A. Durability Index (ASTM D3744): 35 minimum.

B. Sand Equivalent (ASTM D2419): 25 minimum.

C. R-Value (ASTM D2844): 78 minimum.

PART 3 - EXECUTION

3.01 PLACEMENT

A. Obtain Engineer's acceptance of subgrade before placement of base course.

B. Do not place aggregate base material on soft, muddy or frozen subgrade.

C. Moisture condition, spread and compact aggregate base course material to the lines, grades and dimensions indicated on the Drawings and in accordance with applicable sections of Caltrans Section 26.

1. Do not haul material over surfacing in process of construction.

2. Spread and distribute material to provide the required density, depth, grade and dimensions with allowance for subsequent lifts.

3. Produce an even distribution of material without segregation. Should segregation occur, modify or change the spreading procedure to correct segregation problems and to result in uniformity in grading.

3.02 COMPACTION REQUIREMENTS

A. Compact aggregate base course material to obtain an In-Place Density of 95 percent of maximum density unless otherwise indicated.

B. Commence compaction effort by starting at the outer edges of the layer and continue toward the center.

C. Apply water as needed to obtain required In-Place Density.

D. Place and compact each lift to required density before succeeding lift is placed.

E. Blade or otherwise work surfacing as necessary to maintain grade and cross-section at all times, and to keep surface smooth and thoroughly compacted.

3.03 TOLERANCES

A. Structure subgrade: Plus or minus 0.05-foot of the design elevation.

B. Pavement subgrade: Plus or minus 0.05-foot of the design elevation.

C. Aggregate Base surface grade: Plus or minus 0.05-foot of the design elevation.

3.04 FIELD QUALITY CONTROL

A. Contractor's compaction testing responsibilities:

1. Accomplish specified degree of compaction.

2. Undertake and control compaction effort by confirmation tests to verify that the compaction work complies with the specified degree of compaction.

3. Pay for compaction testing services and submit compaction test reports to the Engineer.

B. Frequency of Compaction Testing

1. Structures: Make one compaction test for each 50 cubic yards of aggregate base course material placed, with a minimum of one compaction test per structure.

2. Roadway and Paved Areas: Make one test every 1000 square feet of pavement.

C. Owner's Compaction Compliance Testing

1. Owner may periodically make compliance tests to independently verify that compaction is meeting the specified requirements.

2. If necessary, remove overburden above the test location and backfill and re-compact as necessary after the testing has been completed.

END OF SECTION

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SECTION 02740

ASPHALT PAVING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Requirements for constructing asphalt paving shown.

B. Work includes, but is not necessarily limited to, earthwork, scarifying and preparing the subgrade, placing and compacting aggregate base, applying prime coat and tack coat, placing and compacting asphalt concrete, and all related work.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 01330 – Submittals
2. Section 02300 – Earthwork
3. Section 02722 – Aggregate Base Course material

1.03 REFERENCED STANDARDS

A. State of California Department of Transportation Standard Specifications (Caltrans) 2018.

B. City of Ukiah

1.04 SUBMITTALS

A. Comply with Section 01330.

B. Manufacturer's Data or Certificate of Compliance

1. Aggregate base
2. Tack coat
3. Asphalt design mix
4. Independent test laboratory name

C. Furnish a certificate of compliance signed by the manufacturer prior to the use of any asphalt materials.

1. The certificate shall state that the material complies with the requirements of these Specifications.
2. Furnish a certificate with each lot of material delivered to the site with the lot certified clearly identified in the certificate.
3. Provide certificates of compliance for each type of asphalt product used.

PART 2 - PRODUCTS

2.01 GENERAL

A. Provide materials in accordance with:

1. Caltrans Specifications, as modified by this Section.
2. City of Ukiah, as modified by this Section.

2.02 CLASS 2 AGGREGATE BASE

A. Class 2 aggregate base: As specified in Section 02722.

2.03 TACK COAT

A. Caltrans Specification, Section 39 and 94

B. Grade SS-1h asphalt emulsion.

2.04 ASPHALT CONCRETE

A. Hot Mixed Asphalt Concrete Job Mix Formula: Caltrans Specifications, Section 39 for Type A, Asphalt Concrete (1/2-inch maximum aggregate, medium grading).

B. Asphalt Binder: Caltrans paving asphalt, Caltrans Specifications, Section 92

1. PG 64-16 for North Coast and Low Mountain South Mountain

2.05 SEAL COAT

A. Caltrans Specification, Section 37 and 94

B. Grade SS-1, SS-1h or CSS-1h asphalt emulsion.

2.06 HEADER BOARD

A. 100% post-consumer recycled HDPE plastic.

1. UV stabilized formula resistant to fading from sunlight.
2. Size as shown on Drawings
3. Color: Brown
4. Textured, wood-grained surface
5. Furnish with minimum 1 (one) stake every three feet.

B. Redwood

1. Construction grade redwood conforming to the requirements of Caltrans Specification, Section 57.
2. Size as shown on Drawings
3. Furnish with minimum 1 (one) redwood stake every four feet.

PART 3 - EXECUTION

3.01 PAVEMENT

A. Construct to the line, grade, and section indicated and in accordance with referenced State Specifications.

B. Sawcut existing asphalt paving that is adjacent to new pavement.

C. Prepare subgrade material per Section 02300.

D. Prepare aggregate base course in accordance with Section 02722.

E. Apply tack coat at a minimum residual rate specified for the underlying surface condition as shown in Caltrans Specifications, Section 39-2. Apply tack coat to all adjoin vertical surfaces no more than 8 hours prior to paving.

F. Place asphalt concrete to the requirements of Caltrans Specifications, Section 39, and Section 22.

1. Install in lifts a minimum of 2-inches thick unless otherwise indicated.

2. Install final lift at a maximum thickness of 2 inches.

G. Density of finished paving: not less than 91% nor greater than 97% of maximum theoretical density as determined by California Test 309 (CTM 309)

H. Tolerance of final grade

1. Not more than 0.05 foot from the elevations indicated on the drawings

2. All areas graded to drain

3.02 FOG SEAL

A. Apply asphaltic emulsion for fog seal coat to the requirements of Caltrans Specifications, Section 37 and Section 22.

3.03 HEADER BOARD

A. Place at all limits of paving not abutting a concrete structure.

B. Attached to 12- inch plastic stakes, at three feet on center, with metal screws.

3.04 TRAFFIC STRIPES AND PAVEMENT MARKINGS

A. Apply thermoplastic traffic stripes and pavement markings to the requirements of Caltrans Specifications, Section 84-2.

3.05 TESTING

A. Contractor to provide the following Quality Control Testing

1. Aggregate Gradation

a. Test Method: California Test 202

b. Minimum sampling and testing frequency: 1 per 500 tons but no less than per day.

c. Point of Sampling: California Test 125

2. Asphalt binder content %

a. Test Method: California Test 379 or 382

b. Minimum sampling and testing frequency: 1 per 1000 tons but no less than per day.

c. Point of Sampling: Loose mix behind paver, see California Test 125.

B. Smoothness

1. Contractor to test in conformance to the requirements of Caltrans Specifications, Section 39-2.01.

2. Owner may conduct parallel smoothness testing.

3. If the top layer of pavement does not comply with the smoothness specifications, Contractor to correct in conformance with Caltrans Specifications, Section 39-2.01. No compensation will be made for smoothness correction.

C. Pavement Density Nuclear gage method

1. Contractor to provide quality control testing at locations based on a random sampling plan with not less than one test per five hundred (500) tons.

2. If the density does not fall within the density range, the Contractor may test at two additional locations within the same 500 tons and average the results of the three tests. This averaged result shall fall within the above-specified range.

3. Contractor shall notify the Owner prior to paving and provide contact information for Contractor's testing personnel.

4. Owner may conduct parallel quality assurance testing at its discretion in accordance with Caltrans test methods, 308, 309, and 375.

END OF SECTION

SECTION 03100

CONCRETE FORMWORK

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish all labor, materials, equipment, and incidentals required, and design, install, and remove formwork for cast-in-place concrete as shown on the Drawings and as specified herein.

B. Secure to forms as required or set for embedment as required, all miscellaneous metal items, sleeves, reglets, anchor bolts, inserts, and other items furnished under other Sections and required to be cast into concrete.

1.02 RELATED WORK

A. Related Work Specified Elsewhere

1. Section 03150 - Concrete Joints and Joint Accessories
2. Section 03200 - Concrete Reinforcement
3. Section 03300 - Cast-in-Place Concrete
4. Section 03600 - Grout
5. Section 03740 - Modifications and Repair to Concrete

1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. American Concrete Institute (ACI)

1. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials
2. ACI 301 - Specifications for Structural Concrete
3. ACI 318 - Building Code Requirements for Structural Concrete
4. ACI 347 - Guide to Formwork for Concrete

B. American Plywood Association (APA)

1. APA - Material Grades and Designations as Specified

C. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.04 SUBMITTALS

A. Submit to the ENGINEER, in accordance with Division 1, shop drawings and product data showing materials of construction and details of installation for the following:

1. Form release agent
2. Form ties
3. Void forms

B. Falsework and Drawings - The CONTRACTOR will adhere to the provisions of Section 1717 of the Division of Industrial Safety, Construction Safety Orders, which require that all falsework or vertical shoring installations where the height of the falsework or vertical shoring, as measured from the top of the sills to the soffit of the superstructure, exceeds

14 feet, or where individual horizontal span lengths exceed 16 feet, or provision for vehicular or railroad traffic through falsework or vertical shoring is made, shall be approved and signed by a Professional Civil Engineer, registered in the State of California. A copy of the falsework plan or shoring layout shall be available on the job site at all times.

C. The CONTRACTOR shall, in accordance with the requirements in Division 1, submit detailed plans of falsework proposed to be used. Such plans shall be in sufficient detail to indicate the general layout, sizes of members, anticipated stresses, grade of materials to be used in the falsework, and typical soil conditions.

D. Location and sequence of the concrete placement - Indicate locations of form joints, form-tie layout, panel sizes, and patterns. Show location of form ties on architectural surfaces.

E. Review of pour sequence, form system, and panel layout shall be for appearance and conformance to design concept only. ENGINEER's review of the forming plans or procedures shall not relieve the CONTRACTOR of responsibility for the strength, safety, or correctness of methods used, the adequacy of equipment, or from carrying out the work in full compliance with the requirements of the Drawings and as specified herein.

1.05 QUALITY ASSURANCE

A. The form liner manufacturer's representative shall be on-site during initial installation of the form liner to instruct the CONTRACTOR on the proper methods of application and use of the liner. S/He shall be available to answer any questions on the liner that the ENGINEER may have.

1.06 SYSTEM DESCRIPTION

A. General - Architectural Concrete is wall, slab, beam, or column concrete that will have surfaces exposed to view in the finished work.

B. Structural Design Responsibility - All forms and shoring shall be designed at the CONTRACTOR's expense by a Professional Civil Engineer, registered in the State of California. Formwork shall be designed and erected in accordance with the requirements of ACI 301 and ACI 318 and as recommended in ACI 347 and shall comply with all applicable regulations and codes. The design shall consider any special requirements due to the use of plasticized and/or retarded set concrete.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

A. The use of a manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configurations desired.

2.02 MATERIALS

A. Forms for cast-in-place concrete shall be made of wood, metal, or other approved material. Wood forms for the project shall be new and unused. Construct wood forms of sound lumber or plywood of suitable dimensions and free from knotholes and loose knots. Where used for exposed surfaces, dress and match boards. Sand plywood smooth and fit adjacent panels with tight joints. Metal forms may be used when approved by the ENGINEER and shall be of an appropriate type for the class of work involved. All forms shall be designed and constructed to provide a flat, uniform concrete surface requiring minimal finishing or repairs.

B. Wall Forms:

1. Forms for all exposed exterior and interior concrete walls shall be new and unused "Plyform" exterior grade plywood panels manufactured in compliance with APA

and bearing the trademark of that group, or equal acceptable to the ENGINEER. Provide B grade or better veneer on all faces to be placed against concrete during forming. The class of material and grades of interior plies shall be of sufficient strength and stiffness to provide a flat, uniform concrete surface requiring minimal finishing and grinding.

2. All joints or gaps in forms shall be taped, gasketed, plugged, and/or caulked with an approved material so that the joint will remain watertight and will withstand placing pressures without bulging outward or creating surface patterns.

C. Form Release Agent - Coat all forming surfaces in contact with concrete using an effective, nonstaining, non-residual, water-based, bond-breaking form coating, unless otherwise noted. [Form release agents used in potable water containment structures shall be suitable for use in contact with potable water and shall be nontoxic and free of taste or odor.]

D. Form Ties:

1. Form ties encased in concrete other than those specified in the following paragraphs shall be designed so that, after removal of the projecting part, no metal shall remain within 1 1/2 inches of the face of the concrete. The part of the tie to be removed shall be at least 1/2 inch in diameter or be provided with a wood or metal cone at least 1/2 inch in diameter and 1 1/2 inches long. Form ties in concrete exposed to view shall be the cone-washer type.

2. Form ties for exposed exterior and interior walls shall be as specified in the preceding paragraph except that the cones shall be approved wood or plastic.

3. Flat bar ties for panel forms shall have plastic or rubber inserts having a minimum depth of 1 1/2 inches and sufficient dimensions to permit proper patching of the tie-hole.

4. Common wire shall not be used for form ties.

5. Alternate form ties, consisting of tapered through-bolts at least 1 inch in diameter at the smallest end or through-bolts that utilize a removable tapered sleeve of the same minimum size, may be used at the CONTRACTOR's option. Obtain ENGINEER's acceptance of system and spacing of ties before ordering or purchasing of forming. Clean, fill, and seal form tie hole with nonshrink cement grout. The CONTRACTOR shall be responsible for watertightness of the form ties and any repairs needed.

PART 3 - EXECUTION

3.01 GENERAL

A. Forms shall be used for all cast-in-place concrete including sides of footings. Forms shall be constructed and placed so that the resulting concrete will be of the shape, lines, dimensions, and appearance indicated on the Drawings.

B. Forms for walls shall have removable panels at the bottom for cleaning, inspection, and joint surface preparation. Forms for wall heights in excess of 16 feet shall have closable intermediate inspection ports. Tremies and hoppers for placing concrete shall be used to allow concrete inspection, prevent segregation, and prevent the accumulation of hardened concrete on the forms above the fresh concrete.

C. Molding, bevels, or other types of chamfer strips shall be placed to produce blockouts or chamfers as shown on the Drawings or as specified herein. Chamfer strips shall be provided at horizontal and vertical projecting corners to produce a 3/4-inch chamfer. Rectangular or trapezoidal moldings shall be placed in locations requiring sealants where specified or shown on the drawings. Size of moldings shall conform to the sealant manufacturer's recommendations.

D. Forms shall be sufficiently rigid to withstand construction loads and vibration and to prevent displacement or sagging between supports. Construct forms such that the concrete and/or exposed rebar (dowels) will not be damaged by their removal. The CONTRACTOR shall be entirely responsible for the adequacy of the forming system.

E. Before form material is reused, all surfaces to be in contact with concrete shall be thoroughly cleaned, all damaged places repaired, all projecting nails withdrawn, and all protrusions smoothed. Reuse of wooden forms for other than rough finish will be permitted only if a "like-new" condition of the form is maintained.

F. Metal items, such as rebar, wire, or plates used to support pipe penetrations and pipe embedment shall have a minimum clearance of 2 inches from reinforcing bars.

G. Tolerances in concrete construction shall be in accordance with ACI 117, unless otherwise noted.

3.02 FORM TOLERANCE

A. Forms shall be surfaced, designed, and constructed in accordance with the recommendations of ACI 347 and shall meet the following additional requirements for specified finishes.

B. Formed Surfaces Exposed to View - Edges of all form panels in contact with concrete shall be flush within 1/32 inch and forms for plane surfaces shall be such that the concrete will be plane within 1/16 inch in 4 feet. Forms shall be tight to prevent the passage of mortar, water, and grout. The maximum deviation of the finish wall surface at any point shall not exceed 1/4 inch from the intended surface as shown on the Drawings. Form panels shall be arranged symmetrically and in an orderly manner to minimize the number of seams.

C. Formed surfaces not exposed to view or buried shall meet the requirements of Class "C" Surface in ACI 347.

D. Formed rough surfaces including mass concrete, pipe encasement, electrical duct encasement, and other similar installations shall have no minimum requirements for surface smoothness and surface deflections. The overall dimensions of the concrete shall be plus or minus 1 inch.

3.03 FORM PREPARATION

A. Wood forms in contact with concrete shall be coated with an effective release agent before form installation.

B. Steel forms shall be thoroughly cleaned and mill scale and other ferrous deposits shall be sandblasted or otherwise removed from the contact surface for all forms except those utilized for surfaces receiving a rough finish. All forms shall have the contact surfaces coated with a release agent.

3.04 REMOVAL OF FORMS

A. The CONTRACTOR shall be responsible for all damage resulting from removal of forms. Form removal shall conform to the requirements specified in Section 03300.

3.05 INSPECTION

A. The ENGINEER shall be notified when the forms are complete and ready for inspection at least 24 hours before the proposed concrete placement.

B. Failure of the forms to comply with the requirements specified herein, or to produce concrete complying with the requirements of this Section, shall be grounds for rejection of that portion of the form/concrete work. Rejected work shall be repaired or replaced as directed by the ENGINEER at no additional cost to the OWNER. Such repair or

replacement shall be subject to the requirements of this Section and approval of the ENGINEER.

3.06 FALSEWORK

A. The CONTRACTOR shall be responsible for the design, engineering, construction, maintenance, and safety of all falsework, including staging, walkways, forms, ladders, and similar appurtenances, which shall equal or exceed the applicable requirements of the provisions of the OSHA Safety and Health Standards for Construction, the requirements of the Construction Safety Orders of the California Division of Industrial Safety, and the requirements specified herein.

B. All falsework shall be designed and constructed to provide the necessary rigidity and to support the loads. Falsework for the support of a superstructure shall be designed to support the loads that would be imposed if the entire superstructure were placed at one time.

C. Falsework shall be placed upon a solid footing, safe against undermining, and protected from softening. When the falsework is supported on timber piles, the maximum calculated pile loading shall not exceed 20 tons. When falsework is supported on any portion of the structure that is already constructed, the loading imposed by the falsework shall be spread, distributed, and braced in such a way as to avoid any possibility of damage to the structure.

END OF SECTION

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SECTION 03150

CONCRETE JOINTS AND JOINT ACCESSORIES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish all labor, materials, equipment, and incidentals required and install accessories for concrete joints as shown on the Drawings and as specified herein.

1.02 RELATED WORK

A. Related Work Specified Elsewhere

1. Section 03100 - Concrete Formwork
2. Section 03200 - Concrete Reinforcement
3. Section 03300 - Cast-in-Place Concrete
4. Section 03366 - Tooled Concrete Finishes.
5. Section 03600 - Grout
6. Section 03740 - Modifications and Repair to Concrete.
7. Section 05500 - Miscellaneous Metals

1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Federal Specifications

1. SS-S-210A - Sealing Compound, Preformed Plastic, for Expansion Joints and Pipe Joints

B. American Society for Testing and Materials (ASTM)

1. ASTM A675 - Standard Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality, Mechanical Properties
2. ASTM C881 - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete
3. ASTM C1059 - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete
4. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types)
5. ASTM D1752 - Standard Specification for Preformed Sponge Rubber and Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction

C. US Army Corps of Engineers (CRD)

1. CRD-C 94 Specification for Surface Retarders

D. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.04 SUBMITTALS

A. Submit to the ENGINEER, in accordance with Division 1, submittals including the following:

1. Premolded Joint Fillers - Product data including catalogue cut, technical data, storage requirements, installation requirements, location of use, and conformity to ASTM standards.

2. Bond Breaker - Product data including catalogue cut, technical data, storage requirements, installation requirements, location of use, and conformity to ASTM standards.

3. Expansion Joint Dowels - Product data on the complete assembly including dowels, coatings, lubricants, spacers, sleeves, expansion caps, installation requirements, and conformity to ASTM standards.

4. Compressible Joint Filler - Product data including catalogue cut, technical data, storage requirements, installation requirements, location of use, and conformity to ASTM standards.

5. Bonding Agents - Product data including catalogue cut, technical data, storage requirements, product life, application requirements, and conformity to ASTM standards.

6. In-Form Surface Retarders – Product data, including catalogue cut, technical data, storage requirements, product life, application requirements, and conformity to governing standards.

7. Samples - Two samples of each type of waterstop fitting(s).

B. Certifications:

1. Certify that all materials used within the joint system are compatible with each other.

2. [Certify that materials used in the construction of joints are suitable for use in contact with potable water 30 days after installation.]

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

A. The use of a manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration desired.

B. All materials used together in a given joint (bond breakers, backer rods, joint fillers, sealants, etc.) shall be compatible with one another. Coordinate selection of suppliers and products to ensure compatibility. Under no circumstances shall asphaltic bond breakers or joint fillers be used in joints receiving sealant.

C. All chemical sealant type waterstops shall be products specifically manufactured for the purpose for which they will be used and the products shall have been successfully used on similar structures for more than five years.

2.02 MATERIALS

A. Premolded Joint Filler:

1. Premolded joint filler for structures shall be self-expanding, cork, premolded joint filler conforming to ASTM D1752, Type III. The thickness shall be 3/4 inch unless shown otherwise on the Drawings.

2. Premolded joint filler for sidewalk and roadway concrete pavements, or where fiber joint filler is specifically noted on the Drawings, shall be asphalt-impregnated

fiberboard conforming to ASTM D1751. The thickness shall be 3/4 inch unless otherwise shown on the Drawings.

B. Bond Breaker:

1. Bond breaker tape shall be an adhesive-backed, glazed butyl or polyethylene tape that will satisfactorily adhere to the premolded joint filler or concrete surface as required. The tape shall be the same width as the joint.

2. Except where tape is specifically called for on the Drawings, bond breaker for concrete shall be either bond breaker tape or a nonstaining type bond prevention coating such as Silcoseal Select, by Nox-Crete, Omaha, Nebraska; or equal.

C. Expansion Joint Dowels:

1. Dowels shall be smooth steel conforming to ASTM A675, Grade 70. Dowels must be straight and clean, free of loose, flaky rust and loose scale. Dowels may be sheared to length provided deformation from true shape caused by shearing does not exceed 0.04 inch on the diameter of the dowel and extends no more than 0.04 inch from the end. Bars shall be coated with a bond breaker on the expansion end of the dowel. Expansion caps shall be provided on the expansion end.

2. Expansion dowel caps shall be K-11 plastic dowel caps as manufactured by the Dayton Superior; or equal.

D. Bonding Agent:

1. Epoxy bonding agent shall be two-component, solvent-free, moisture insensitive, epoxy resin material conforming to ASTM C881, Type V. The bonding agent shall be Sikadur 32 Hi-Mod by Sika Corporation; Concresive Liquid LPL by BASF Building Systems; or equal.

2. Latex bonding agent shall be non-reemulsifiable acrylic-polymer latex conforming to ASTM C1059, Type II.

E. Compressible Joint Filler:

1. The joint filler shall be a non-extruded, watertight strip material used to fill expansion joints between structures. The material shall be capable of being compressed at least 40 percent for 70 hours at 68 degrees Fahrenheit and subsequently recovering at least 20 percent of its original thickness in the first 1/2 hour after unloading. Compressible joint filler shall be Phyzite/Evazote 380 as manufactured by Chase Construction Products; Wabo Evazote UV as manufactured by BASF Chemical Company; or equal.]

PART 3 - EXECUTION

3.01 INSTALLATION

A. Construction Joints:

1. Make construction joints only at locations shown on the Drawings or as approved by the ENGINEER. Any additional or relocation of construction joints proposed by the CONTRACTOR must be submitted to the ENGINEER for written approval.

2. All joints shall be perpendicular to main reinforcement. Continue reinforcing steel through the joint as indicated on the Drawings.

3. Provide sealant grooves for joint sealant where indicated on the Drawings.

4. At all construction joints, and at concrete joints designated on the Drawings to be "roughened," uniformly roughen the surface of the concrete to a full amplitude (distance between high and low points or side to side) of not less than 1/4 inch to

expose a fresh face. Thoroughly clean joint surfaces of loose or weakened materials by water blasting or sandblasting and prepare for bonding. At least 2 hours before, and again shortly before the new concrete is deposited, saturate the joints and adjacent concrete surfaces to at least 12 inches past the joint with water.

5. In-Form Surface Retarders:

   a. In lieu of manually roughening the concrete surface, roughened surface may be achieved by means of an in-form surface retarder.

   b. Product catalogue cut-sheet shall clearly indicate the product's suitability for use in horizontal and/or vertical construction joints. Use of product(s) whose cut-sheets do not explicitly indicate their use in construction joints is not permissible.

   c. Surface retarder shall result in a uniformly roughened surface with a full amplitude of not less than 1/4 inch.

   d. Contractor shall provide test panel of appropriate size for evaluating the effectiveness of the treatment. Test Panel shall represent a minimum of four mixtures representing four depths of etch. Test panel shall remain on-site for the duration of concrete work and shall be the standard against which all future construction joint roughened surfaces shall be compared.

   e. Construction joints with a surface roughness that do not meet the minimum amplitude, in the opinion of the Engineer, shall require supplemental manual roughening, at the Contractor's expense.

6. In lieu of the above method for bonding plastic concrete to hardened concrete, the following optional method may be used. Concrete must be allowed to set a minimum of 28 days. Use a latex-bonding agent applied to roughened and cleaned surfaces of set concrete in strict accordance with manufacturer's recommendations.

7. Provide waterstops in all wall and slab construction joints in liquid containment structures and at other locations shown on the Drawings.

8. Keyways shall not be used in construction joints unless specifically shown on the Drawings or approved by the ENGINEER.

B. Control Joints:

1. Provide sealant grooves, sealants, and waterstops at control joints in slabs on grade or walls as detailed. Provide waterstops at all wall and slab control joints in water containment structures and at other locations shown on the Drawings.

2. Control joints may be sawed if specifically approved by the ENGINEER. If control joint grooves are sawed, properly time the saw cutting with the time of the concrete set. Start cutting as soon as concrete has hardened sufficiently to prevent aggregates from being dislodged by the saw. Complete cutting before shrinkage stresses have developed sufficiently to induce cracking. No reinforcing shall be cut during sawcutting.

3. Extend every other bar of reinforcing steel through control joints or as indicated on the Drawings. Where specifically noted on the Drawings, coat the concrete surface of the joint with a bond breaker before placing new concrete against the joint. Avoid coating reinforcement or waterstops with bond breaker at these locations.

C. Expansion Joints:

1. Do not extend through expansion joints, reinforcement, or other embedded metal items that are continuously bonded to concrete on each side of the joint.

2. Position premolded joint filler material accurately. Secure the joint filler against displacement during concrete placement and compaction. Place joint filler over the

face of the joint, allowing for sealant grooves as detailed on the Drawings. Tape all joint filler splices to prevent intrusion of mortar. Seal expansion joints as shown on the Drawings.

3. Expansion joints shall be 3/4 inch in thickness unless otherwise noted on the Drawings.

END OF SECTION

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SECTION 03200

CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish all labor, materials, equipment and incidentals required and install all concrete reinforcement complete as shown on the Drawings and as specified herein.

1.02 RELATED WORK

A. Related Work Specified Elsewhere

1. Section 03100 - Concrete Formwork
2. Section 03150 - Concrete Joints and Joint Accessories
3. Section 03300 - Cast-in-Place Concrete
4. Section 03600 - Grout
5. Section 03740 - Modifications and Repair to Concrete

1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Federal Specifications

1. QQ-W-461H - Wire, Steel, and Carbon (round, bare and coated)

B. American Concrete Institute (ACI)

1. ACI 301 - Specifications for Structural Concrete
2. ACI 315 - Details and Detailing of Concrete Reinforcement
3. ACI 318 - Building Code Requirements for Structural Concrete
4. ACI SP-66 - ACI Detailing Manual

C. American Society for Testing and Materials (ASTM)

1. ASTM A615 - Standard Specification for Deformed and Plain Carbon Steel - Bars for Concrete Reinforcement
2. ASTM A706 - Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement
3. ASTM A1064 - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete

D. American Welding Society (AWS)

1. AWS D1.4 - Structural Welding Code - Reinforcing Steel

E. Concrete Reinforcing Steel Institute (CRSI)

1. CRSI - Manual of Standard Practice

F. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.04 SUBMITTALS

A. Reinforcing Steel - Submit to the ENGINEER, in accordance with Division 1, placement drawings conforming to the recommendations of ACI 315. All reinforcement in a concrete placement shall be included in a single placement drawing or cross-referenced to the pertinent main placement drawing. The main drawing shall include the additional reinforcement (around openings, at corners, etc.) shown on the standard details sheets. Bars to have special coatings and/or to be of special steel or special yield strength are to be clearly identified. Shop drawings shall not be prepared by reproducing the plans and details indicated on the Contract drawings but shall consist of completely redrawn plans and details as necessary to indicate complete fabrication and installation of reinforcing steel. Including, but not limited to, large scale drawings at joints, detailing bar placement in congested areas.

B. Bar Bending Details - The bars shall be referenced to the same identification marks shown on the placement drawings. Bars to have special coatings and/or to be of special steel or special yield strength shall be clearly identified.

C. Mechanical Connectors - Submit two samples of each type of mechanical reinforcing steel connectors.

D. Test Reports - Submit test reports for each of the following items:

1. Mill Test - Submit a certified copy of a mill test on each steel proposed for use showing the physical properties of the steel and the chemical analysis.

2. Foreign Manufactured Steel - Submit a certified copy of test reports for each foreign manufactured steel proposed for use in the fabrication of reinforcement. The tests shall be specifically made for this project at the expense of the CONTRACTOR by a domestic independent testing laboratory certified to perform the tests. The testing shall be for conformity to the applicable ASTM standard(s).

E. Certification

1. Submit certification that welders are qualified in accordance with AWS D1.4 when welding of reinforcement is required.

1.05 QUALITY ASSURANCE

A. In no case shall any reinforcing steel be covered with concrete until the installation of the reinforcement, including the size, spacing, and position of the reinforcement has been observed by the ENGINEER and the ENGINEER's release to proceed with concreting has been obtained. The ENGINEER shall be given ample prior notice of the readiness of placed reinforcement for observation. The forms shall be kept open until the ENGINEER has completed observations of the reinforcing steel.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Reinforcing steel shall be substantially free from mill scale, rust, dirt, grease, or other foreign matter.

B. Reinforcing steel shall be shipped and stored with bars of the same size and shape, fastened in bundles with durable tags, marked in a legible manner with waterproof markings showing the same "mark" designations as those shown on the submitted Placement Drawings.

C. Reinforcing steel shall be stored off the ground, protected from moisture, and kept free from dirt, oil, or other injurious contaminants.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

A. The use of a manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configurations desired.

2.02 MATERIALS

A. Materials shall be new and shall comply with the following material specifications.

B. Deformed concrete reinforcing bars are to be ASTM A615, Grade 60 deformed bars.

C. Concrete Reinforcing Bars required on the Drawings are to be Field Bent or Welded - ASTM A706.

D. [Spiral Reinforcement shall comply with the following:

1. ASTM A615, Grade 60 for hot-rolled plain or deformed bars

2. ASTM A1064 for cold-drawn wire]

E. The following alternative materials are allowed:

1. ASTM A706, Grade 60 shall be used. The following requirements shall be satisfied:

a. The actual yield strength of the reinforcing steel based on mill tests shall not exceed the specified yield strength by more than 18,000 pounds per square inch (psi). Retests shall not exceed this value by more than an additional 3,000 psi.

b. The ratio of the actual ultimate tensile strength to the actual tensile yield strength of the reinforcement shall not be less than 1.25.

c. The carbon equivalency of the bars shall be 0.55 or less.

F. Reinforcing Steel Accessories:

1. Plastic protected bar supports shall comply with CRSI Bar Support Specifications, Class 1 - Maximum Protection.

2. Stainless steel protected bar supports shall comply with CRSI Bar Support Specifications, Class 2 - Moderate Protection.

3. Precast concrete block bar supports (dobies) shall comply with CRSI Bar Support Specifications, Precast Block. Block shall have equal or greater compressive strength than the surrounding concrete.

G. Tie Wire:

1. Tie wires for Reinforcement shall be 16-gauge or heavier, black annealed wire, conforming to Federal Specification QQ-W-461H.

2.03 FABRICATION

A. Fabrication of reinforcement shall be in compliance with the CRSI Manual of Standard Practice.

B. Bars shall be cold bent. Bars shall not be straightened or re-bent.

C. Bars shall be bent around a revolving collar having a diameter of not less than that recommended by ACI 318.

D. Bar ends that are to be butt-spliced, placed through limited diameter holes in metal, or threaded shall have the applicable end(s) saw-cut. Such ends shall terminate in flat surfaces within 1.5 degrees of a right angle to the axis of the bar.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Surface condition, bending, spacing, and tolerances of placement of reinforcement shall comply with CRSI Manual of Standard Practice. The CONTRACTOR shall be solely responsible for providing an adequate number of bars and maintaining the spacing and clearances shown on the Drawings.

B. Except as otherwise noted on the Drawings, the minimum concrete cover for reinforcement shall be as follows:

1. Concrete cast against and permanently exposed to earth - 3 inches
2. Concrete exposed to soil, water, sewage, sludge, and/or weather (including bottom cover of slabs over water or sewage) - 2 inches
3. Concrete not exposed to soil, water, sewage, sludge, and/or weather:
    a. Slabs (top and bottom cover), walls, joists, shells and folded plate members - 1.5 inches
    b. Beams and columns, primary reinforcement - 2 inches
    c. Ties, spirals, and stirrups - 1.5 inches
4. Tie wires in all concrete – 1.5 inches

C. Reinforcement that will be exposed for a considerable length of time after being placed shall be coated with a heavy coat of neat cement slurry.

D. No reinforcing steel bars shall be welded either during fabrication or erection unless specifically shown on the Drawings or specified herein, or unless prior written approval has been obtained from the ENGINEER. All bars that have been welded, including tack welds, without such approval shall be immediately removed from the work. If welding of reinforcement is approved or specifically called for, it shall comply with AWS D1.4.

E. Reinforcing steel interfering with the location of other reinforcing steel, conduits, or embedded items may be moved within the specified tolerances or one bar diameter, whichever is greater. Greater displacements of bars to avoid interference shall only be made with the approval of the ENGINEER. Do not cut reinforcement to install inserts, conduits, mechanical openings, or other items without the prior approval of the ENGINEER.

F. Securely support and tie reinforcing steel to prevent movement during concrete placement. Secure dowels in place before placing concrete.

G. Reinforcing steel bars shall not be field bent except where shown on the Drawings or specifically authorized in writing by the ENGINEER. If authorized, bars shall be cold-bent around a standard diameter spool as specified within CRSI. Do not heat bars. Closely inspect the reinforcing steel for breaks. If the reinforcing steel is damaged, replace, Cadweld, or otherwise repair as directed by the ENGINEER. Do not bend reinforcement after it is embedded in concrete unless specifically permitted on the Drawings.

3.02 REINFORCEMENT AROUND OPENINGS

A. Unless specific additional reinforcement around openings is shown on the Drawings, provide additional reinforcing steel on each side of the opening equivalent to one-half of the cross-sectional area of the reinforcing steel interrupted by the opening. The bars shall have sufficient length to develop bond at each end beyond the opening or penetration.

3.03 SPLICING OF REINFORCEMENT

A. Splices designated as compression splices on the Drawings shall be 30 bar diameters, but not less than 12 inches, unless otherwise noted.

B. Tension lap splices shall be provided at all laps in compliance with ACI 318. The length of splices shall conform to the Contract Drawings. Splices in adjacent bars shall be staggered. Class A splices may be used when 50 percent or less of the bars are spliced within the required lap length. Class B splices shall be used at all other locations.

3.04 ACCESSORIES

A. Determine, provide, and install accessories such as chairs, chair-bars, and the like in sufficient quantities and strength to adequately support the reinforcement and prevent its displacement during the erection of the reinforcement and the placement of concrete.

B. Use precast concrete blocks (dobies) where the reinforcing steel is to be supported over soil. In no case shall such supports be continuous.

C. Stainless steel bar supports or steel chairs with stainless steel tips shall be used where the chairs are set on forms for a concrete surface that will be exposed to weather, high humidity, or liquid (including bottom of slabs over liquid-containing areas). Use of galvanized or plastic-tipped metal chairs is permissible in all other locations unless otherwise noted on the Drawings or specified herein.

D. Alternate methods of supporting top steel in slabs, such as steel channels supported on the bottom steel or vertical reinforcing steel fasteners to the bottom and top mats may be used if approved by the ENGINEER.

3.05 INSPECTION

A. In no case shall any reinforcing steel be covered with concrete until the installation of the reinforcement, including the size, spacing, and position of the reinforcement, has been observed by the ENGINEER and the ENGINEER's release to proceed with the concreting has been obtained. The ENGINEER shall be given a minimum of 24 hours prior notice of the readiness of placed reinforcement for observation. The forms shall be kept open until the ENGINEER has completed observations of the reinforcing steel.

END OF SECTION

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SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish all labor and materials required and install all cast-in-place concrete complete as shown on the Drawings and as specified herein.

1.02 RELATED WORK

A. Related Work Specified Elsewhere

1. Section 03100 – Concrete Forming and Accessories
2. Section 03150 – Concrete Joints and Accessories
3. Section 03210 – Concrete Reinforcement
4. Section 03350 – Concrete Finishing
5. Section 05500 – Metal Fabrications

1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. American Concrete Institute (ACI)

1. ACI 304R – Guide for Measuring, Mixing, Transporting, and Placing Concrete
2. ACI 305R – Hot Weather Concreting
3. ACI 306.1 – Standard Specification for Cold Weather Concreting
4. ACI 315 – Details and Detailing of Concrete Reinforcement
5. ACI 318 – Building Code Requirements for Structural Concrete

B. American Society for Testing and Materials (ASTM)

1. ASTM C31 – Standard Practice for Making and Curing Concrete Test Specimens in the Field
2. ASTM C33 – Standard Specification for Concrete Aggregates
3. ASTM C39 – Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
4. ASTM C42 – Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete
5. ASTM C94 – Standard Specification for Ready-Mixed Concrete
6. ASTM C143 – Standard Test Method for Slump of Hydraulic Cement Concrete
7. ASTM C150 – Standard Specification for Portland Cement
8. ASTM C157 – Standard Test Method for Length Change of Hardened Hydraulic Cement Mortar and Concrete
9. ASTM C171 – Standard Specification for Sheet Materials for Curing Concrete
10. ASTM C173 – Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method

11. ASTM C231 – Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method

12. ASTM C260 – Standard Specification for Air-Entraining Admixtures for Concrete

13. ASTM C309 – Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete

14. ASTM C311 – Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland-Cement Concrete

15. ASTM C494 – Standard Specification for Chemical Admixtures for Concrete

16. ASTM C596 – Standard Test Method for Drying Shrinkage of Mortar Containing Hydraulic Cement

17. ASTM C618 – Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for use in Concrete

18. ASTM C1017 – Standard Specification for Chemical Admixtures for use in Producing Flowing Concrete

C. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.04 SUBMITTALS

A. Submit to the ENGINEER, submittals including the following:

1. Sources of cement, pozzolan, and aggregates.

2. Material Safety Data Sheets (SDS) for all concrete components and admixtures.

3. Air-entraining admixture – Product data including catalogue cut, technical data, storage requirements, product life, recommended dosage, temperature considerations, and conformity to ASTM standards.

4. Water-reducing admixture – Product data including catalogue cut, technical data, storage requirements, product life, recommended dosage, temperature considerations, and conformity to ASTM standards.

5. High range, water-reducing admixture – Product data including catalogue cut, technical data, storage requirements, product life, recommended dosage, temperature considerations, retarding effect, slump range, and conformity to ASTM standards. Identify proposed locations for use.

6. Concrete mix design for each formulation of concrete proposed for use including constituent quantities per cubic yard, water-cementitious materials ratio, type, and manufacturer of cement, compressive strength, concrete slump, shrinkage, and air content. Provide with (a) or (b) below for each mix proposed.

   a. Standard deviation data for each proposed concrete mix based on statistical records,

   b. OR

   c. The curve of water-cementitious materials ratio versus concrete cylinder strength for each formulation of concrete proposed based on laboratory tests. The cylinder strength shall be the average of the 28-day cylinder strength test results for each mix. Provide results of 7- and 14-day tests if available.

7. Sheet curing material – Product data including catalogue cut, technical data, and conformity to ASTM standards.

8. Liquid curing compound – Product data including catalogue cut, technical data, storage requirements, product life, application rate, and conformity to ASTM standards. Identify proposed locations of use.

9. Samples – Fine and coarse aggregates if requested by the ENGNEER.

10. Test Reports - Submit test reports for each of the following items:

    a. Fine aggregates – Sieve analysis, physical properties, and deleterious substances

    b. Coarse aggregates – Sieve analysis, physical properties, and deleterious substances

    c. Cements – Chemical analysis and physical properties for each type

    d. Pozzolans – Chemical analysis and physical properties

11. Certifications:

    a. Certify that admixtures used in the same concrete mix are compatible with each other and the aggregates.

    b. Certify that the Contractor is not associated with the independent testing laboratory nor does the Contractor or its officers have a beneficial interest in the laboratory.

12. Work Plans:

    a. Hot weather concreting

    b. Cold weather concreting

1.05 QUALITY ASSURANCE

A. Reinforced concrete shall comply with ACI 318, and other stated requirements, codes, and standards. The most stringent requirement of the codes, standards, and this Section shall apply when conflicts arise.

B. Only one source of cement and aggregate shall be used on any one structure. Concrete shall be uniform in color and appearance.

C. Well in advance of placing concrete, discuss with the ENGINEER the sources of individual materials and batched concrete proposed for use. Discuss placement methods and curing. Propose methods of hot and cold weather concreting as required.

D. A meeting shall be held before placement of plasticized concrete. The plasticizer (high-range water-reducer) manufacturer’s representative and the Contractor shall be available to discuss the properties and techniques of batching and placing plasticized concrete.

E. If, during the progress of the work, it is impossible to secure concrete of the required workability and strength with the materials being furnished, the ENGINEER may order such changes in proportions or materials, or both, as may be necessary to secure the desired properties. All changes so ordered shall be made at the CONTRACTOR's expense.

F. If, during the progress of work, the materials from the sources originally accepted change in characteristics, the CONTRACTOR shall, at their expense, make new acceptance tests of aggregates and establish new design mixes.

G. Testing of the following materials shall be furnished by the CONTRACTOR to verify conformity with this Specification Section and the stated ASTM Standard(s).

    1. Fine aggregates for conformity to ASTM C33 – sieve analysis, physical properties, and deleterious substances

    2. Coarse aggregates for conformity to ASTM C33 – sieve analysis, physical properties, and deleterious substances

3. Cements for conformity to ASTM C150 – chemical analysis and physical properties

4. Pozzolans for conformity to ASTM C618 – chemical analysis and physical properties

5. Proposed concrete mix design(s) – compressive strength, slump, shrinkage, and air content

H. All materials incorporated in the work shall conform to accepted samples.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Cement – Store cement in weathertight buildings, bins, or silos to provide protection from dampness and contamination and to minimize warehouse set.

B. Aggregate – Arrange and use stockpiles to avoid excessive segregation or contamination with other materials or with other sizes of like aggregates. Build stockpiles in successive horizontal layers not exceeding 3 feet in thickness. Complete each layer before the next is started. Do not use frozen or partially frozen aggregate.

C. Sand – Arrange and use stockpiles to avoid contamination. Allow sand to drain to uniform moisture content before using. Do not use frozen or partially frozen sands.

D. Admixtures – Store in closed containers to avoid contamination, evaporation, or damage. Provide suitable agitating equipment to assure uniform dispersion of ingredients in admixture solutions that tend to separate. Protect liquid admixtures from freezing and other temperature changes that could adversely affect their characteristics.

E. Pozzolan – Store in weathertight buildings, bins, or silos to provide protection from dampness and contamination.

F. Sheet Curing Materials – Store in weathertight buildings or off the ground and under cover.

G. Liquid curing compounds – Store in closed containers.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

A. The use of a manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration desired.

B. Like items of materials shall be the end products of one manufacturer in order to provide standardization for appearance, maintenance, and manufacturer's services.

2.02 MATERIALS

A. Materials shall comply with this Section and any applicable state or local requirements.

B. Cement – Domestic Portland cement shall comply with ASTM C150 Type II. Air-entraining cement shall not be used. The cement brand shall be subject to approval by the ENGINEER and one brand shall be used throughout the work.

C. Fine Aggregates – Fine aggregates shall be washed inert natural sand conforming to the requirements of ASTM C33.

D. Coarse Aggregates – Coarse aggregates shall be well-graded crushed stone or washed gravel conforming to the requirements of ASTM C33. Grading requirements shall be as listed in ASTM C33 Table 2 for the specified coarse aggregate size number. Limits of deleterious substances and physical property requirements shall be as listed in ASTM C33 Table 3 for severe weathering regions. Size numbers for concrete mixes shall be as shown in Table 1 herein.

E. Water – Water shall be potable and free from injurious amounts of oil, acids, alkalis, salts, organic matter, or other deleterious substances.

F. Admixtures – Admixtures shall be free of chlorides and alkalis (except for those attributable to water). When it is required to use more than one admixture in a concrete mix, the admixtures shall be from the same manufacturer. Admixtures shall be compatible with the concrete mix including other admixtures [and shall be suitable for use in contact with potable water after 30 days of concrete curing].

1. Air-Entraining Admixture – The admixture shall comply with ASTM C260. Proportioning and mixing shall be in accordance with manufacturer's recommendations.

2. Admixtures causing retarded or accelerated setting of concrete shall not be used without written approval from the ENGINEER. When allowed, the admixtures shall be retarding or accelerating water-reducing or high-range water-reducing admixtures.

3. Water-Reducing Admixture – The admixture shall comply with ASTM C494, Type A. Proportioning and mixing shall be in accordance with manufacturer's recommendations.

4. High-Range Water-Reducer (Plasticizer) – The admixture shall comply with ASTM C494, Type F and shall result in nonsegregating plasticized concrete with little bleeding and with the physical properties of low water/cement ratio concrete. The treated concrete shall be capable of maintaining its plastic state in excess of 2 hours. Proportioning and mixing shall be in accordance with manufacturer's recommendations.

G. Pozzolan (Fly Ash) – Pozzolan shall be Class F fly ash complying with ASTM C618, except the Loss On Ignition (LOI) shall be limited to 3 percent maximum.

H. Sheet Curing Material – Sheet curing material shall be waterproof paper, polyethylene film, or white burlap-polyethylene sheeting, all of which must comply with ASTM C171.

I. Liquid Curing Compound – Liquid membrane-forming curing compound shall comply with the requirements of ASTM C309, Type 1-D (clear or translucent with fugitive dye) and shall contain no wax, paraffin, or oil.

2.03 CONCRETE MIXES

A. Development of mix designs and testing shall be by an independent testing laboratory acceptable to the ENGINEER but engaged by and at the expense of the CONTRACTOR.

B. Select proportions of ingredients to meet the design strength and materials limits specified in Table 1 and to produce concrete having proper placability, durability, strength, appearance, and other required properties. Proportion ingredients to produce a homogenous mixture that will readily work into corners and angles of forms and around reinforcement without permitting materials to segregate or allowing excessive free water to collect on the surface.

1. The design mix shall be based on standard deviation data of prior mixes with essentially the same proportions of the same constituents or, if such data is not available, be developed by a testing laboratory, acceptable to the ENGINEER, engaged by and at the expense of the CONTRACTOR. Acceptance of mixes based on standard deviation shall be based on the modification factors for standard deviation tests contained in ACI 318. The water content of the concrete mix, determined by laboratory testing, shall be based on a curve showing the relation between the water-cementitious ratio and 7- and 28-day compressive strengths of concrete made using the proposed materials. The curves shall be determined by four or more points, each representing an average value of at least

three test specimens at each age. The curves shall have a range of values sufficient to yield the desired data, including the specified design strengths as modified below, without extrapolation. The water content of the concrete mixes to be used, as determined from the curve, shall correspond to strengths 16 percent greater than the specified design strengths. The resulting mix shall not conflict with the limiting values for maximum water-cementitious ratio and net minimum cementitious content as specified in Table 1.

C. Compression Tests – Provide testing of the proposed concrete mix or mixes to demonstrate compliance with the specified design strength requirements in conformity with the above paragraph.

D. Entrained air, as measured by ASTM C231, shall be as shown in Table 1.

1. If the air-entraining agent proposed for use in the mix requires testing methods other than ASTM C231 to accurately determine air content, make special note of this requirement in the admixture submittal.

E. Slump of the concrete as measured by ASTM C143, shall be as shown in Table 1. If a high-range water-reducer (plasticizer) is used, the slump indicated shall be that measured before plasticizer is added. Plasticized concrete shall have a slump ranging from 7 to 10 inches.

F. Proportion admixtures according to the manufacturer's recommendations. Two or more admixtures specified may be used in the same mix provided that the admixtures in combination retain full efficiency and have no deleterious effect on the concrete or on the properties of each other.

Table 1
Concrete Mix Requirements

Class	Design Strength (1)	Cement (2)	Fine Aggregate (2)	Coarse Aggregate (3)	Cementitious Content lbs./cu. yd. (min) (4)
A	2500	C150 Type II	C33	57	440
B	3000	C150 Type II	C33	57	480
D	4000	C150 Type II	C33	57	560

Class	W/C Ratio (Max.) (5)	Fly Ash (6)	AE Range (7)	WR (8)	HRWR (9)	Slump Range Inches
A	0.62	--	3.5 to 5	Yes	No	1–4
B	0.54	--	3.5 to 5	Yes	No	1–3
D	0.40-0.42	15–25%	3.5 to 5	Yes	No	3–5

NOTES:
(1) Minimum compressive strength in pounds per square inch at 28 days
(2) ASTM designation
(3) Size Number in ASTM C33
(4) Cementitious content in pounds per cubic yard
(5) W/C is water-cementitious ratio by weight
(6) Percent content of total cementitious material
(7) AE is percent air entrainment
(8) WR is water-reducer admixture
(9) HRWR is high-range water-reducer admixture

PART 3 - EXECUTION

3.01 MEASURING MATERIALS

A. Concrete shall be composed of Portland cement, fine aggregate, coarse aggregate, water, and admixtures as specified and shall be produced by a plant acceptable to the ENGINEER. All constituents, including admixtures, shall be batched at the plant except a high-range water-reducer may be added in the field.

B. Measure materials for batching concrete by weighing in conformity with and within the tolerances given in ASTM C94 except as otherwise specified. Scales shall have been certified by the local Sealer of Weights and Measures within one year of use.

C. Measure the amount of free water in fine aggregates within 0.3 percent with a moisture meter. Compensate for varying moisture contents of fine aggregates. Record the number of gallons of water as batched on printed batching tickets.

D. Admixtures shall be dispensed either manually using calibrated containers or measuring tanks, or by means of an automatic dispenser approved by the manufacturer of the specific admixture.

1. Charge air-entraining and chemical admixtures into the mixer as a solution using an automatic dispenser or similar metering device.

2. Inject multiple admixtures separately during the batching sequence.

3.02 MIXING AND TRANSPORTATION

A. Concrete shall be ready-mixed concrete. No hand mixing will be permitted. Clean each transit mix truck drum and reverse drum rotation before the truck proceeds under the batching plant. Equip each transit-mix truck with a continuous, nonreversible, revolution counter showing the number of revolutions at mixing speeds.

B. Ready-mix concrete shall be transported to the site in watertight agitator or mixer trucks loaded not in excess of their rated capacities as stated on the nameplate.

C. Keep the water tank valve on each transit truck locked at all times. Any addition of water must be approved by the ENGINEER. Added water shall be incorporated by additional mixing of at least 35 revolutions. All added water shall be metered and the amount of water added shall be shown on each delivery ticket.

D. All central plant and rolling stock equipment and methods shall comply with ACI 318 and ASTM C94.

E. Select equipment of size and design to ensure continuous flow of concrete at the delivery end. Metal or metal-lined non-aluminum discharge chutes shall be used and shall have slopes not exceeding 1 vertical to 2 horizontal and not less than 1 vertical to 3 horizontal. Chutes more than 20 feet long and chutes not meeting slope requirements may be used if concrete is discharged into a hopper before distribution.

F. Retempering (mixing with or without additional cement, aggregate, or water) of concrete or mortar that has reached initial set will not be permitted.

G. Handle concrete from mixer to placement as quickly as practicable while providing concrete of required quality in the placement area. Dispatch trucks from the batching plant so they arrive at the work site just before the concrete is required, thus avoiding excessive mixing of concrete while waiting, or delays in placing successive layers of concrete in the forms.

H. Furnish a delivery ticket for ready-mixed concrete to the ENGINEER as each truck arrives. Each ticket shall provide a printed record of the weight of cement and each aggregate as batched individually. Use the type of indicator that returns for zero punch or returns to zero after a batch is discharged. Clearly indicate the weight of fine and coarse aggregate,

cement, and water in each batch, the quantity delivered, the time any water is added, and the numerical sequence of the delivery. Show the time of day batched and time of discharge from the truck. Indicate the number of revolutions of the truck mixer.

3.03 TEMPERATURE AND MIXING TIME CONTROL

A. In cold weather, do not allow the as-mixed temperature of the concrete and concrete temperatures at the time of placement in the forms to drop below 40 degrees Fahrenheit (F).

B. If water or aggregate has been heated, combine water with aggregate in the mixer before cement is added. Do not add cement to mixtures of water and aggregate when the temperature of the mixture is greater than 90 degrees F.

C. In hot weather, cool ingredients before mixing to maintain temperature of the concrete below the maximum placing temperature of 90 degrees F. If necessary, substitute well-crushed ice for all or part of the mixing water.

D. The maximum time interval between the addition of mixing water and/or cement to the batch and the placing of concrete in the forms shall not exceed the values shown in Table 2.

E. If an approved high-range water-reducer (plasticizer) is used to produce plasticized concrete, the maximum time interval shall not exceed 90 minutes.

Table 2
Maximum Time to Discharge of Concrete

Air or Concrete Temperature (Whichever is higher)	Maximum Time (Minutes)
70 to 90 Degrees F (21 to 32 Degrees C)	60
40 to 69 Degrees F (5 to 20 Degrees C)	90

F = Fahrenheit, C = Celsius

3.04 CONCRETE APPEARANCE

A. Concrete mix showing either poor cohesion or poor coating of the coarse aggregate with paste shall be remixed. If this does not correct the condition, the concrete shall be rejected. If the slump is within the allowable limit, but excessive bleeding, poor workability, or poor finishability are observed, changes in the concrete mix shall be obtained only by adjusting one or more of the following:

1. The gradation of the aggregate
2. The proportion of fine and coarse aggregate
3. The percentage of entrained air, within the allowable limits

B. Concrete for the work shall provide a homogeneous structure that, when hardened, will have the required strength, durability, and appearance. Mixtures and workmanship shall be such that concrete surfaces, when exposed, will require no finishing. After concrete surfaces are stripped, the concrete, when viewed in good lighting from 10 feet away, shall be pleasing in appearance, and at 20 feet shall show no visible defects.

3.05 PLACING AND COMPACTING

A. Placing:

1. Placing of all concrete shall be in accordance with the recommendations contained in ACI 304R.

2. Verify that all formwork completely encloses concrete to be placed and is securely braced before concrete placement. Remove ice, excess water, dirt, and other foreign materials from forms. Confirm that reinforcement and other embedded items are securely in place. Have a competent worker at the location of the placement that can assure that reinforcing steel and embedded items remain in designated locations while concrete is being placed. Sprinkle semi-porous sub grades or forms to eliminate suction of water from the mix. Seal extremely porous sub grades in an approved manner.

3. Deposit concrete as near to its final position as possible to avoid segregation due to rehandling or flowing. Place concrete continuously at a rate that ensures the concrete is being integrated with fresh plastic concrete. Do not deposit concrete that has partially hardened or has been contaminated by foreign materials or on concrete that has hardened sufficiently to cause formation of seams or planes of weakness within the section. If the section cannot be placed continuously, place construction joints as specified or as approved.

4. Pumping of concrete will be permitted. Use a mix design and aggregate sizes suitable for pumping and submit for approval.

5. Remove temporary spreaders from forms when the spreader is no longer useful. Temporary spreaders may remain embedded in concrete only when made of galvanized metal or concrete and if prior approval has been obtained.

6. Do not place concrete for supported elements until concrete previously placed in the supporting element (columns, slabs, and/or walls) has reached adequate strength.

B. Slabs:

1. After suitable bulkheads, screeds, and jointing materials have been positioned, the concrete shall be placed continuously between construction joints beginning at a bulkhead, edge form, or corner. Each batch shall be placed into the edge of the previously placed concrete to avoid stone pockets and segregation.

2. Avoid delays in casting. If there is a delay in casting, the concrete placed after the delay shall be thoroughly spaded and consolidated at the edge of that previously placed to avoid cold joints. Concrete shall then be brought to correct level and struck off with a straightedge. Bullfloats or darbies shall be used to smooth the surface, leaving it free of humps or hollows.

3. "Jitterbugs" shall not be used on slab surfaces to aid in finishing.

4. Where slabs are to be placed integrally with the walls below them, place the walls and compact as specified. Allow 1 hour to pass between placement of the wall and the overlying slab to permit consolidation of the wall concrete. Keep the top surface of the wall moist so as to prevent cold joints.

C. Formed Concrete:

1. Place concrete in forms using tremie tubes and taking care to prevent segregation. Bottom of tremie tubes shall preferably be in contact with the concrete already placed. Do not permit concrete to drop freely more than 4 feet. Place concrete for walls in 12- to 24-inch lifts, keeping the surface horizontal. If plasticized concrete is used, the maximum lift thickness may be increased to 7 feet and the maximum free fall of concrete shall not exceed 15 feet.

D. Compacting:

1. Consolidate concrete by vibration, puddling, spading, rodding, or forking so that concrete is thoroughly worked around reinforcement, embedded items, and openings, and into corners of forms. Puddling, spading, etc. shall be continuously performed along with vibration of the placement to eliminate air or stone pockets that may cause honeycombing, pitting, or planes of weakness.

2. All concrete shall be placed and compacted with mechanical vibrators. The number, type, and size of the units shall be approved by the ENGINEER in advance of placing operations. No concrete shall be ordered until sufficient approved vibrators (including standby units in working order) are on the job site.

3. A minimum frequency of 7,000 revolutions per minute is required for mechanical vibrators. Insert and withdraw vibrators vertically at points from 18 to 30 inches apart. At each insertion, vibrate sufficiently to consolidate concrete, generally from 5 to 15 seconds. Do not over-vibrate so as to segregate. Keep a spare vibrator on the site during concrete placing operations.

4. Concrete Slabs - Concrete for slabs less than 8 inches thick shall be consolidated with vibrating screeds; slabs 8 to 12 inches thick shall be compacted with internal vibrators and (optionally) with vibrating screeds. Vibrators shall always be placed into concrete vertically and shall not be laid horizontally or laid over.

5. Walls - Internal vibrators (rather than form vibrators) shall be used unless otherwise approved by the ENGINEER. In general, for each vibrator needed to melt down the batch at the point of discharge, one or more additional vibrators must be used to densify, homogenize, and perfect the surface. The vibrators shall be inserted vertically at regular intervals, through the fresh concrete and slightly into the previous lift, if any.

6. Amount of Vibration - Vibrators are to be used to consolidate properly placed concrete but shall not be used to move or transport concrete in the forms. Vibration shall continue until the following conditions are met:

a. The frequency returns to normal.

b. The surface appears liquefied, flattened, and glistening.

c. Trapped air ceases to rise.

d. Coarse aggregate has blended into the surface, but has not disappeared.

3.06 CURING AND PROTECTION

A. Protect all concrete work against injury from the elements and defacements of any nature during construction operations.

B. Curing Methods:

1. Curing Methods for Concrete Surfaces - Cure concrete to retain moisture and maintain specified temperature at the surface for a minimum of 7 days after placement. Curing methods to be used are as follows:

a. Water Curing – Keep entire concrete surface wet by ponding, continuous sprinkling, or covering with saturated burlap. Begin wet cure as soon as concrete attains an initial set and maintain wet cure 24 hours a day.

b. Sheet Material Curing – Cover entire surface with sheet material. Securely anchor sheeting to prevent wind and air from lifting the sheeting or entrapping air under the sheet. Place and secure sheet as soon as initial concrete set occurs.

c. Liquid Membrane Curing – Apply curing compound over the entire concrete surface except for surfaces to receive additional concrete. Curing

compound shall NOT be placed on any concrete surface where additional concrete is to be placed, where concrete sealers or surface coatings are to be used, or where the concrete finish requires an integral floor product. Curing compound shall be applied as soon as the free water on the surface has disappeared and no water sheen is visible, but not after the concrete is dry or when the curing compound can be absorbed into the concrete. Application shall be in compliance with the manufacturer's recommendations.

C. Specified Applications of Curing Methods:

1. Slabs on Grade and Footings – Water curing, sheet material curing, or liquid membrane curing shall be used.

2. Structural Slabs – Water curing or liquid membrane curing shall be used.

3. Horizontal Surfaces that will Receive Additional Concrete, Coatings, Grout or Other Material that Requires Bond to the substrate – Water curing shall be used.

4. Formed Surfaces – No curing shall be used if nonabsorbent forms are left in place 7 days. Water curing shall be used if absorbent forms are used. Sheet curing or liquid membrane curing shall be used if forms are removed before 7 days. Exposed horizontal surfaces of formed walls or columns shall be water cured for 7 days or until next placement of concrete is made.

5. Concrete Joints – Water curing or sheet material curing shall be used.

D. Finished surfaces and slabs shall be protected from the direct rays of the sun to prevent checking and crazing.

3.07 REMOVAL OF FORMS

A. Except as otherwise specifically approved by the ENGINEER, forms shall not be removed before the concrete has attained a strength of at least 30 percent of its specified design strength, nor before reaching 100 degree days of curing for walls and vertical surfaces, and 500 degree days of curing for beams and slabs, (whichever is the longer). Degree days are defined as the total number of 24-hour periods multiplied by the weighted average daily air temperature at the surface of the concrete (e.g., 5 days at an average 70 degrees F = 350 degree days).

B. Shores shall not be removed until the concrete has attained at least 60 percent of its specified design strength and also sufficient strength to support safely its own weight and construction live loads.

3.08 INSPECTION AND FIELD TESTING

A. The batching, mixing, transporting, placing, and curing of concrete shall be subject to the inspection of the ENGINEER at all times. The CONTRACTOR shall advise the ENGINEER of their readiness to proceed at least 24 hours before each concrete placement. The ENGINEER will inspect the preparations for concreting including the preparation of previously placed concrete, the reinforcing steel and the alignment, and the cleanliness and tightness of formwork. No placement shall be made without the inspection and acceptance of the ENGINEER.

B. Sets of field control cylinder specimens will be taken by an independent entity paid for by the DISTRICT during the progress of the work, in compliance with ASTM C31. The number of sets of concrete test cylinders taken of each class of concrete placed each day shall not be less than one set per day, nor less than one set for each 150 cubic yards of concrete, nor less than one set for each 3,000 square feet of surface area for slabs or walls. If the total volume of concrete were such that the frequency of testing required for a given class of concrete would provide less than five strength tests, tests shall be made from at least

five randomly selected batches or from each batch if fewer than five batches are anticipated.

C. A "set" of test cylinders consists of six 6”x12” cylinders: two to be tested at 7 days and two to be tested and their strengths averaged at 28 days. The final two may be used for a special test at 3 days or to verify strength after 28 days if 28-day test results are low. A copy of all concrete test results shall be provided to the DISTRICT for review.

D. When the average 28-day compressive strength of the cylinders in any set falls below the specified design strength or below proportional minimum 7-day strengths (where the proper relationships between 7- and 28-day strengths have been established by tests), proportions, water content, or temperature conditions shall be changed to achieve the required strengths.

E. The CONTRACTOR shall cooperate in the making of tests by allowing free access to the work for the selection of samples; providing an insulated, closed curing box for specimens; affording protection to the specimens against injury or loss through the operations; and furnishing material and labor required for the purpose of taking concrete cylinder samples. All shipping of specimens will be paid for by the DISTRICT. Curing boxes shall be acceptable to the ENGINEER.

F. Concrete Slump:

1. Slump tests will be made in the field immediately before placing the concrete by an independent entity paid for by the DISTRICT. Such tests shall be made in accordance with ASTM C143. If the slump is greater than the specified range, the concrete shall be rejected.

2. At a minimum the first three trucks shall be tested to establish consistency. Additionally, testing will be performed with each strength test (cylinders) and each air content test.

3. The ENGINEER reserves the right to increase the frequency of testing when deemed necessary.

G. Air Content:

1. Testing for air content shall be performed on a fresh concrete sample by an independent entity paid for by the DISTRICT. Air content testing for concrete made of ordinary aggregates having low absorption shall be performed in compliance with either the pressure method complying with ASTM C231 or by the volumetric method complying with ASTM C173. If lightweight aggregates or aggregates with high absorptions are used, the latter test method shall be used. If air content is below the specified air-entrainment range listed in Table 1, air-entraining admixture may be added on-site to bring the concrete within specifications. If air content is above the specified air-entrainment range, the concrete shall be rejected.

2. At a minimum, the first three trucks shall be tested to establish consistency, then every third truck thereafter. Additionally, an air content test shall be performed with each strength test (cylinders). Concrete samples for the testing of air content shall be taken at the point of placement and not at the truck chute/hopper.

3. The ENGINEER reserves the right to increase the frequency of testing when deemed necessary.

H. The ENGINEER may have cores taken from any questionable area in the concrete work such as construction joints and other locations as required for determination of concrete quality. The results of tests on such cores shall be the basis for acceptance, rejection, or determining the continuation of concrete work.

I. The CONTRACTOR shall cooperate in obtaining cores by allowing free access to the work and permitting the use of ladders, scaffolding, and such incidental equipment as may be required. Repair all core holes. The work of cutting and testing the cores will be at the expense of the DISTRICT.

3.09 FAILURE TO MEET REQUIREMENTS

A. Should the strengths shown by test specimens made and tested in compliance with the previous provisions fall below the values given in Table 1, the ENGINEER shall have the right to require changes in proportions outlined to apply to the remainder of the work. Furthermore, the ENGINEER shall have the right to require additional curing on those portions of the structure represented by the test specimens that failed. The cost of such additional curing shall be at the CONTRACTOR's expense. In the event that such additional curing does not give the strength required, as evidenced by core and/or load tests, the ENGINEER shall have the right to require strengthening or replacement of those portions of the structure that fail to develop the required strength. The cost of all such core borings and/or load tests, and any strengthening or concrete replacement required because strengths of test specimens are below that specified, shall be entirely at the expense of the CONTRACTOR. In such cases of failure to meet strength requirements, the CONTRACTOR and ENGINEER shall confer to determine what adjustment, if any, can be made in compliance with Sections titled "Strength" and "Failure to Meet Strength Requirements" of ASTM C94. The "purchaser" referred to in ASTM C94 is the CONTRACTOR in this Section.

B. When the tests on field control specimens of concrete fall below the specified strength, the ENGINEER will permit check tests for strengths to be made by means of typical cores drilled from the structure in compliance with ASTM C42 and C39. In the case of cores not indicating adequate strength, the ENGINEER, in addition to other recourses, may require, at the CONTRACTOR's expense, load tests on any one of the elements in which such concrete was used. Tests need not be made until concrete has aged 60 days.

C. Should the strength of test cylinders fall below 60 percent of the required minimum 28-day strength, the concrete shall be rejected and shall be removed and replaced.

3.10 PATCHING AND REPAIRING

A. It is the intent of this Section to require quality work including adequate forming, proper mixture and placement of concrete, and curing, so completed concrete surfaces will require no patching.

B. Defective concrete and honeycombed areas shall be repaired as directed by the ENGINEER.

C. As soon as forms have been removed and the concrete surfaces exposed, fins and other projections shall be removed. All exposed surfaces shall be carefully examined and any irregularities shall be immediately rubbed or ground in a satisfactory manner in order to secure a smooth, uniform, and continuous surface. Plastering or coating of surfaces to be smoothed will not be permitted. No repairs shall be made until after inspection by the ENGINEER. In no case will extensive patching of honeycombed concrete be permitted. Concrete containing minor voids, holes, honeycombing, or similar depression defects shall be repaired as specified herein. Concrete containing extensive voids, holes, honeycombing, or similar depression defects shall be completely removed and replaced. The CONTRACTOR, at their own expense, shall promptly execute all repairs and replacements herein specified.

D. Defective surfaces to be repaired as specified in Paragraph C shall be cut back from true line a minimum depth of 1/2 inch over the entire area. Feathered edges will not be permitted. Where chipping or cutting tools are not required in order to deepen the area properly, the surface shall be prepared for bonding by the removal of all laitance or soft

material and not less than 1/32-inch depth of the surface film from all hard portions, by means of an efficient sandblast. After cutting and sandblasting, the surface shall be wetted sufficiently in advance of shooting with shotcrete or with cement mortar so that while the repair material is being applied, the surfaces under repair will remain moist, but not so wet as to overcome the suction upon which a good bond depends. The material used for the repair proposed shall contain such proportion of Atlas White Portland Cement as is required to make the color of the patch match the color of the surrounding concrete.

E. Recesses left by the removal of form ties shall be filled. Immediately after removal of forms, remove plugs and break off metal ties as required by Section 03 10 00. Promptly fill holes upon stripping as follows: moisten the hole with water, followed by a 1/16-inch brush coat of neat cement slurry mixed to the consistency of a heavy paste. Immediately plug the hole with a 1 to 1.5 mixture of cement and concrete sand mixed slightly damp to the touch (just short of "balling"). Hammer the grout into the hole until dense and an excess of paste appears on the surface in the form of a spider web. Trowel smooth with heavy pressure. Avoid burnishing.

F. Surface defects that do not impair structural strength shall be repaired. When patching exposed surfaces the same source of cement and sand as used in the parent concrete shall be employed. Adjust color if necessary by addition of proper amounts of white cement. Rub lightly with fine Carborundum stone at an age of 1 to 5 days if necessary to bring the surface down to flush with the parent concrete. Exercise care to avoid damaging or staining the virgin skin of the surrounding parent concrete. Wash thoroughly to remove all rubbed matter.

G. Clean all exposed concrete surfaces and adjoining work stained by leakage of concrete.

3.11 EMBEDMENT OF CONDUIT AND PIPES IN CONCRETE

A. Conduit, pipes, and sleeves of any material not harmful to concrete and within limitations of the Contract Drawings and Specifications and ACI 318 shall be permitted to be embedded in concrete with the prior approval of the ENGINEER, provided they are not considered by the ENGINEER to displace structural concrete, except as provided herein.

B. Conduit and pipes of aluminum shall not be embedded in structural concrete.

C. Conduit and pipes, with their fittings, embedded within a column shall not displace more than four percent of the area of the cross section on which the strength is calculated or which is required for fire protection. The ENGINEER shall determine whether the strength of the construction has been significantly impaired.

D. Conduits and pipes embedded within a slab, wall, or beam shall satisfy the following:

1. They shall not be larger in outside dimension than 2 inches.

2. Minimum center-to-center spacing between conduit and/or pipe runs shall be 3 times outside diameter or width.

3. They shall be located in such a manner as to maintain a minimum of 1 inch of clear space between the embedded item and primary reinforcing.

4. They shall not significantly impair the strength of the construction. The ENGINEER shall determine whether the strength of the construction has been significantly impaired.

E. No liquids, gas, or vapor, except water not exceeding 90 degrees Fahrenheit or 50-psi pressure, shall be placed in the pipes until the concrete has attained its design strength.

F. In solid slabs, conduits and/or pipes shall be placed between the top and bottom reinforcement at the centerline of the slab. At a minimum, they shall be located in such a manner as to maintain a minimum of 1 inch of clear space between the embedded item and primary reinforcing.

G. Concrete cover for pipes shall be not less than 1 1/2 inches for concrete exposed to earth or weather, nor less than 3/4 inch for concrete not exposed to weather or in contact with the ground.

H. Additional reinforcement with an area not less than 0.002 times the area of concrete section shall be provided normal to the conduit and/or pipe.

I. Conduits and/or piping shall be so fabricated and installed that cutting, bending, or displacement of reinforcement from its proper location will not be required.

3.12 SCHEDULE

A. Table 3 lists the general applications for the various concrete classes and design strengths.

Table 3
Concrete Schedule

Class	Design Compressive Strength at 28 days (psi)	Description
A	2,500	Concrete fill and duct encasement
B	3,000	Concrete overlay slabs and pavements
C	N/A	Not used
D	4,500	Walls, slabs on grade, suspended slab and beam systems, columns, grade beams, pile caps and all other structural concrete

END OF SECTION

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SECTION 03366

TOOLED CONCRETE FINISHES

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish all labor, materials, equipment and incidentals required to finish cast-in-place concrete surfaces as shown on the Drawings and as specified herein.

1.02 RELATED WORK

A. Related Work Specified Elsewhere

1. Section 03100 - Concrete Formwork
2. Section 03150 - Concrete Joints and Joint Accessories
3. Section 03300 - Cast-in-Place Concrete
4. Section 03600 - Grout
5. Section 03740 - Modifications and Repair to Concrete
6. Moisture Protection is included in Division 7.

1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. American Society for Testing and Materials (ASTM)

1. ASTM C33 - Standard Specification for Concrete Aggregates
2. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
3. ASTM C779 - Standard Test Method for Abrasion Resistance of Horizontal Concrete

B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.04 SUBMITTALS

A. Submit to the ENGINEER, in accordance with Division 1, product data showing materials of construction and details of application for the following:

1. Concrete Sealer - Submit product data including catalogue cuts, technical data, storage requirements, product life, working time after mixing, temperature considerations, conformity to required ASTM standards, and Material Safety Data Sheet. Confirmation that the sealer is compatible with additionally applied coatings shall also be submitted.
2. Concrete Hardener - Submit product data including catalogue cuts, technical data, storage requirements, product life, application requirements, conformity to required ASTM standards, and Material Safety Data Sheet.

1.05 QUALITY ASSURANCE

A. Finish:

1. For concrete that will receive additional applied finishes or materials, the surface finish specified is required for the proper application of the specified manufacturer's

products. Where alternate products are approved for use, determine if changes in finish are required and provide the proper finish to receive these products.

2. Changes in finish made to accommodate products different from those specified shall be performed at no additional cost to the OWNER. Submit the proposed new finish and their construction methods to the ENGINEER for approval.

B. Services of Manufacturer's Representative:

1. The CONTRACTOR shall make available, at no additional cost to the OWNER, upon 72 hours notification, the services of a qualified field representative of the manufacturer of the curing compound, sealer, or hardener to instruct the user on the proper application of the product under the prevailing job conditions.

PART 2 - PRODUCTS

2.01 GENERAL

A. The use of a manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration desired.

2.02 MATERIALS

A. Concrete sealer shall comply with ASTM C309, Type 1, Class A or B. Concrete sealer must also be compliant with State of California VOC regulations. Concrete sealer shall be Spartan Cote WB II by Edoco (Burke), Kure-N-Seal WB by BASF Building Systems (Sonneborn), or equal.

B. Concrete Hardener must be compliant with State of California VOC regulations. Concrete hardener shall be Mastertop 100 by BASF Building Systems, Burke Nonmetallic Hardener by Edoco (Burke), or equal.

PART 3 - EXECUTION

3.01 FORMED SURFACES

A. Forms shall not be removed before the requirements of Section 03300 have been satisfied.

B. Exercise care to prevent damaging edges or obliterating the lines of chamfers, rustications, or corners when removing the forms or performing any other work adjacent thereto.

C. Clean all exposed concrete surfaces and adjoining work stained by leakage of concrete.

D. Rough-Formed Surfaces:

1. Immediately after stripping forms and before concrete has changed color, carefully remove all fins and projections.

2. Promptly fill holes left by tie cones and defects as specified in Section 03300.

E. Rubbed Finish:

1. Immediately upon stripping forms and before concrete has changed color, carefully remove all fins. While the wall is still damp apply a thin coat of medium-consistency neat cement slurry by means of bristle brushes to provide a bonding coat within all pits, air holes, or blemishes in the parent concrete. Avoid coating large areas with slurry at one time.

2. Before slurry has dried or changed color, apply a dry (almost crumbly) grout proportioned by volume and consisting of 1 part cement to 1 1/2 parts of clean masonry sand having a fineness modulus of approximately 2.3 and complying with the gradation requirements of ASTM C33 for such a material. Grout shall be uniformly applied by means of damp pads of coarse burlap approximately 6 inches

square used as a float. Scrub grout into the pits and air holes to provide dense mortar in all imperfections.

3. Allow the mortar to partially harden for 1 or 2 hours depending upon the weather and ambient temperature. If the air is hot and dry, keep the wall damp during this period using a fine fog spray. When the grout is hardened sufficiently so it can be scraped from the surface with the edge of a steel trowel without damaging the grout in the small pits or holes, cut off all that can be removed with a trowel. (Caution: Grout allowed to remain on the wall too long will harden and will be difficult to remove).

4. Allow the surface to dry thoroughly and rub it vigorously with clean, dry burlap to completely remove any dried grout. No visible film of grout shall remain after this rubbing. The entire cleaning operation for any area must be completed the day it is started. Do not leave grout on surfaces overnight. Allow sufficient time for grout to dry after it has been cut off with the trowel so it can be wiped off clean with the burlap.

5. On the day following the repair of pits, air holes, and blemishes, the walls shall again be wiped clean with dry, used pieces of burlap containing old, hardened mortar, which will act as a mild abrasive. After this treatment, there shall be no built-up film remaining in the parent surface. If, however, such a film is present, a fine abrasive stone shall be used to remove all such material without breaking through the surface film of the original concrete. Such scrubbing shall be light and sufficient only to remove excess material without changing the texture of the concrete.

6. A thorough wash-down with stiff bristle brushes shall follow the final bagging or stoning operations. No extraneous materials shall remain on the surface of the wall. The wall shall be sprayed with a fine fog spray periodically to maintain a continually damp condition for at least 3 days after application of the repair grout.

F. Abrasive Blast Finish:

1. Coordinate with Rubbed Finish application. Do not begin until Rubbed Finish operation is complete or before concrete has reached minimum 7-day strength. The Rubbed Finish application may be deleted by the ENGINEER if the unfinished concrete surface is of superior quality. Apply the abrasive blast finish only where indicated on Drawings.

2. Prepare a sample area of minimum 4 feet high by 16 feet wide and blast Finish as directed by ENGINEER on a portion of new wall construction that will not be exposed in the final work. The sample area shall contain a variety of finishes obtained with different nozzles, nozzle pressures, grit materials, and blasting techniques for selection by ENGINEER. The final accepted sample shall remain exposed until completion of all blast finish operations.

3. The blast finish operation shall meet all regulatory agency requirements. The blast finish CONTRACTOR shall be responsible for obtaining all required permits and/or licenses.

4. Perform abrasive blast finishing in as continuous an operation as possible, utilizing the same work crew to maintain continuity of finish on each surface or area of work. Maintain patterns or variances in depths of blast as present on the accepted sample.

5. Use an abrasive grit of proper type and gradation as well as equipment and technique to expose aggregate and surrounding matrix surfaces as follows:

a. Medium: Generally expose coarse aggregate - 1/4-inch to 3/8-inch reveal.

6. Abrasive blast corners and edge of patterns carefully, using back-up boards, to maintain uniform corner or edge line. Determine type of nozzle, nozzle pressure, and blasting techniques required to match Architect's samples.

7. Upon completion of the blast finish operation, thoroughly flush finished surfaces with clean, clear water to remove residual dust and grit. Allow to air dry until curing of concrete is complete.

3.02 FLOORS AND SLABS

A. Machine Float:

1. Screed floors and slabs with straightedges to the established grades shown on the Drawings. Immediately after final screeding, a dry cement/sand shake in proportion of two sacks of Portland cement to 350 pounds of coarse natural concrete sand shall be broadcast evenly over the surface at a rate approximately equal to 500 pounds per 1,000 square feet of floor area. Do not sprinkle neat, dry, cement on the surface.

2. The application of the cement/sand shake may be eliminated at the discretion of the ENGINEER if the base slab concrete exhibits adequate fattiness and homogeneity and the need is not indicated.

3. When the concrete has hardened sufficiently to support the weight of a power float without it digging into or disrupting the level surface, thoroughly float the shake into the surface with a heavy revolving disc type power compacting machine capable of providing 200-pound compaction force distributed over a 24-inch-diameter disc.

4. Start floating along the walls and around columns and then move systematically across the surface, leaving a matte finish.

5. The compacting machine shall be a "Kelley Power Float with Compaction Control" as manufactured by Kelly Industries, or equal. Troweling machines equipped with float (shoes) blades that are slipped over the trowel blades may be used for floating. Floating with a troweling machine equipped with normal trowel blades will not be permitted. The use of any floating or troweling machine that has water attachments for wetting the concrete surface during finishing will not be permitted.

B. Hand Float:

1. In lieu of power floating, small areas may be compacted by hand floating. The dry cement/sand shake previously specified shall be used unless specifically eliminated by the ENGINEER. Screed the floors and slabs with straightedge to the established grades shown on the Drawings. While the concrete is still green, but sufficiently hardened as to support a finisher and kneeboards with no more than 1/4-inch indentation, float to a true, even plane with no coarse aggregate visible. Use sufficient pressure on the floats to bring moisture to the surface.

C. Finishing Tolerances:

1. Level floors and slabs to a tolerance of plus or minus 1/8 inch when checked with a 10-foot straightedge placed anywhere on the slab in any direction. Where drains occur, pitch floors to drains such that there are no low spots left undrained. Failure to meet either of the above requirements shall be cause for removal, grinding, or other corrective measure as directed by the ENGINEER.

D. Broomed Finish:

1. Finish concrete as specified in Paragraph 3.2A. When the concrete has stiffened sufficiently to maintain small surface indentations, draw a bristle broom lightly across the surface in the direction of drainage, or in the case of walks and stairs, perpendicular to the direction of traffic to provide a nonslip surface.

E. Steel Trowel Finish:

1. Finish concrete as specified in Paragraph 3.2A, then hand steel trowel to a perfectly smooth hard even finish free from high or low spots or other defects.

2. Where concrete is greater than 15 feet in each direction, the CONTRACTOR may use a power steel trowel provided a minimum of three troweling passes are made of the entire surface.

3.03 CONCRETE SEALER

A. Prepare and seal floor surfaces indicated on the Drawings as follows:

1. Finish the concrete as specified in the preceding paragraphs and in accordance with the Schedule of Finishing in Paragraph 3.6.

B. Newly Placed Concrete:

1. Surface must be sound and properly finished. Surface is application-ready when it is damp, but not wet and can no longer be marred by a walking worker.

C. Newly Cured Bare Concrete:

1. Level any spots gouged out by trades. Remove all dirt, dust, droppage, oil, grease, asphalt, and foreign matter. Cleanse with caustics and detergents as required. Rinse thoroughly and allow to dry so that surface is no more than damp, and not wet.

D. Aged Concrete:

1. Restore surface soundness by patching, grouting, filling cracks, and holes, etc. Surface must also be free of any dust, dirt, and other foreign matter. Use power tools and/or strippers to remove any incompatible sealers or coatings. Cleanse as required, following the procedure indicated under cured concrete.

E. Methods:

1. Comply with the manufacturer's recommendations to apply sealer so as to form a continuous, uniform film by spray, soft-bristle push broom, long-nap roller, or lamb’s wool applicator.

F. Applications:

1. Two coats are required for curing concrete. Apply the first coat evenly and uniformly as soon as possible after final finishing at the rate of 200 to 400 square feet per gallon. Apply the second coat when all trades are completed and the structure is ready for occupancy, at the rate of 400 to 600 square feet per gallon.

2. For sealing new concrete, both coats shall be applied full strength.

3. For sealing aged concrete, when renovating, dust proofing, and sealing, the first coat should be thinned 10 to 15 percent with reducer per manufacturer's directions.

3.04 CONCRETE HARDENER

A. Prepare and apply hardener to floor surfaces indicated on the Drawings as follows:

1. Finish the concrete as specified in the preceding paragraphs and in accordance with the Schedule of Finishing in Paragraph 3.6.

2. Concrete floor hardener shall be applied to green (newly placed) concrete surfaces only.

B. Methods:

1. Comply with the manufacturer's recommendations in the application of the product.

2. Do not apply dry shake into the bleed water.

C. Applications:

1. The product shall be applied using a two-pass process ("shakes"). Using a mechanical spreader, spread approximately 1/2 to 2/3 of the required floor hardener evenly over the concrete surface.

2. If the CONTRACTOR chooses to broadcast the floor hardener by hand, in lieu of a mechanical spreader, apply each pass perpendicular to the previous application to better ensure complete coverage.

3. Apply the product in quantities prescribed for "medium duty," but not less than 100 pounds per 100 square feet.

4. Approval of Finishing

D. All concrete surfaces, when finished, will be inspected by the ENGINEER.

E. Surfaces that do not meet the requirements in this Specification shall be refinished or reworked.

F. After finishing horizontal surfaces, regardless of the finishing procedure specified, the concrete shall be cured in compliance with Section 03300, unless otherwise directed by the ENGINEER.

3.05 SCHEDULE OF FINISHING

A. Concrete shall be finished as specified either to remain as natural concrete or to receive an additional applied finish or material under another Section.

B. Concrete for the following conditions shall be finished as noted on the Drawings and as further specified herein:

1. Concrete to receive dampproofing and waterproofing: Rough-Formed Finish

2. Concrete not exposed to view and not scheduled to receive an additional applied finish or material: Rough-Formed Finish

3. Exterior vertical concrete above grade, exposed to view (except surfaces formed with a form liner): Rubbed Finish

4. Interior vertical concrete exposed to view except in water containment areas: Rubbed Finish

5. Interior and exterior underside of concrete exposed to view: Rubbed Finish]

6. Exterior surfaces exposed to view and indicated to have an abrasive blast finish: Abrasive Blast Finish

7. Interior or exterior horizontal concrete requiring floor hardener or sealer: See Paragraphs 3.3 and 3.4, and prepare floor in accordance with manufacturer's recommendations

8. Concrete for exterior walks, interior and exterior stairs: Broomed Finish perpendicular to direction of traffic

9. Concrete slabs on which process liquids flow or in contact with sludge: Steel Trowel Finish

END OF SECTION

SECTION 03600

GROUT

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish all labor, materials, equipment and incidentals required and install grout complete as shown on the Drawings and as specified herein.

B. Perform all sampling and furnish all testing of materials and products by an independent testing laboratory acceptable to the ENGINEER but engaged by and at the expense of the CONTRACTOR.

1.02 RELATED WORK

A. Related Work Specified Elsewhere:

1. Section 03100 - Concrete Formwork
2. Section 03150 - Concrete Joints and Joint Accessories
3. Section 03200 - Concrete Reinforcement
4. Section 03300 - Cast-in-Place Concrete
5. Section 03740 - Modifications and Repair to Concrete
6. Section 05500 - Miscellaneous Metals

1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. American Society for Testing and Materials (ASTM)

1. ASTM C531 - Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical Resistant Mortars, Grouts and Monolithic Surfacing and Polymer Concretes
2. ASTM C579 - Standard Test Method for Compressive Strength of Chemical Resistant Mortars, Grouts and Monolithic Surfacing and Polymer Concretes
3. ASTM C827 - Standard Test Method for Change in Height at Early Ages of Cylindrical Specimens of Cementitious Mixtures
4. ASTM C1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
5. ASTM D695 - Standard Test Method for Compressive Properties of Rigid Plastics

B. US Army Corps of Engineers (CRD)

1. CRD-C 621 - Corps of Engineers Specification for Nonshrink Grout

C. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.04 SUBMITTALS

A. Submit to the ENGINEER, in accordance with Division 1, submittals including the following:

1. Commercially Manufactured Nonshrink Cementitious Grout - Submit product data including catalogue cuts, technical data, storage requirements, product life,

working time after mixing, temperature considerations, conformity to required ASTM standards, and Material Safety Data Sheet.

2. Commercially Manufactured Nonshrink Epoxy Grout– Submit product data including catalogue cuts, technical data, storage requirements, product life, working time after mixing, temperature considerations, conformity to required ASTM standards, and Material Safety Data Sheet.

3. Cement Grout - The submittal shall include the type and brand of the cement, the gradation of the fine aggregate, product data on any proposed admixtures, and the proposed mix of the grout.

B. Samples:

1. Submit samples of commercially manufactured grout products when requested by the ENGINEER.

2. Submit aggregates for use in concrete grout when requested by the ENGINEER.

C. Laboratory Test Reports:

1. Submit laboratory test data as required under Section 03300 for concrete to be used as concrete grout.

D. Certifications:

1. Certify that commercially manufactured grout products and concrete grout admixtures are suitable for use in contact with potable water after 30 days of curing.

2. Certify that the CONTRACTOR is not associated with the independent testing laboratory, nor does the CONTRACTOR or its officers have a beneficial interest in the laboratory.

1.05 QUALITY ASSURANCE

A. Qualifications - Grout manufacturer shall have a minimum of 10 years experience in the production and use of the type of grout proposed for the work.

B. Preinstallation Conference - Well in advance of grouting, hold a preinstallation meeting to review the requirements for surface preparation, mixing, placing, and curing procedures for each product proposed for use. Parties concerned with grouting shall be notified of the meeting at least 10 days before its scheduled date.

C. Services of Manufacturer's Representative - A qualified field technician of the nonshrink grout manufacturer, specifically trained in the installation of the products, shall attend the preinstallation conference and shall be present for the initial installation of each type of nonshrink grout. Additional services shall also be provided, as required, to correct installation problems.

D. Field Testing - The field testing of Concrete Grout shall be as specified for concrete in Section 03300.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the jobsite in original, unopened packages, clearly labeled with the manufacturer's name, product identification, batch numbers, and printed instructions.

B. Store materials in full compliance with the manufacturer's recommendations. Total storage time from date of manufacture to date of installation shall be limited to 6 months or the manufacturer's recommended storage time, whichever is less.

C. Material that becomes damp or otherwise unacceptable shall be immediately removed from the site and replaced with acceptable material at no additional expense to the OWNER.

D. Nonshrink, cement-based grouts shall be delivered as pre-blended, prepackaged mixes requiring only the addition of water.

E. Nonshrink epoxy grouts shall be delivered as pre-measured, prepackaged, three-component systems requiring only blending as directed by the manufacturer.

1.07 DEFINITIONS

A. Nonshrink Grout - A commercially manufactured product that does not shrink in either the plastic or hardened state, is dimensionally stable in the hardened state, and bonds to a clean baseplate.

PART 2 - PRODUCTS

2.01 GENERAL

A. The use of a manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration desired.

B. All like materials shall be the products of one manufacturer or supplier in order to provide standardization of appearance.

2.02 MATERIALS

A. Nonshrink Cementitious Grout:

1. Nonshrink cementitious grouts shall meet or exceed the requirements of ASTM C1107, Grades B or C and CRD-C 621. Grouts shall be Portland cement-based, contain a pre-proportioned blend of selected aggregates and shrinkage-compensating agents and shall require only the addition of water. Nonshrink cementitious grouts shall not contain expansive cement or metallic particles. The grouts shall exhibit no shrinkage when tested in conformity with ASTM C827. The minimum 28-day compressive strength of 5,000 pounds per square inch (psi) is required for all nonshrink cementitious grout.

2. General purpose nonshrink cementitious grout shall conform to the standards stated above and shall be SikaGrout 212 by Sika Corp.; NS Grout by The Euclid Chemical Co.; FSP Construction Grout by Five Star Products Inc.; or equal.

3. Flowable (Precision) nonshrink cementitious grout shall conform to the standards stated above and shall be Masterflow 928 by BASF Building Systems; Hi-Flow Grout by the Euclid Chemical Co.; SikaGrout 212 by Sika Corp.; Five Star Grout, by Five Star Products Inc.; or equal.

B. Nonshrink Epoxy Grout:

1. Nonshrink epoxy-based grout shall be a pre-proportioned, three-component, 100 percent solids system consisting of epoxy resin, hardener, and blended aggregate. It shall have a minimum compressive strength of 10,000 psi in 7 days when tested in accordance with ASTM C579, Method B, and have a maximum thermal expansion of $30x10^{-6}$ when tested in accordance with ASTM C531. The grout shall be Masterflow 648 CP by BASF Building Systems; Five Star HP Epoxy Grout by Five Star Products, Inc.; Sikadur 42 Grout-Pak by Sika Corp.; E^3-HP by the Euclid Chemical Co.; or equal.

C. Cement Grout:

1. Cement grouts shall be a mixture of one part Portland cement conforming to ASTM C150 Types I, II, or III and one to two parts sand conforming to ASTM C33 with sufficient water to place the grout. The water content shall be sufficient to impart workability to the grout but not to the degree that it will allow the grout to flow.

D. Concrete Grout:

1. Concrete grout shall conform to the requirements of Section 03300 except as specified herein. It shall be proportioned with cement, pozzolan, coarse and fine aggregates, water, water reducer, and air-entraining agent to produce a mix having an average strength of 2,900 psi at 28 days, or 2,500 psi nominal strength. Coarse aggregate size shall be 3/8-in maximum. Slump should not exceed 5 inches and should be low as practical yet still retain sufficient workability.

E. Water:

1. Water shall be potable, free from injurious amounts of oil, acid, alkali, organic matter, or other deleterious substances.

PART 3 - EXECUTION

3.01 PREPARATION

A. Grout shall be placed over cured concrete that has attained its full design strength unless otherwise approved by the ENGINEER.

B. Concrete surfaces to receive grout shall be clean and sound; free of ice, frost, dirt, grease, oil, curing compounds, laitance, and paints; and free of all loose material or foreign matter that may affect the bond or performance of the grout.

C. Roughen hardened concrete surfaces by chipping, sandblasting, or other mechanical means to ensure bond of the grout to the concrete. Remove loose or broken concrete. Irregular voids or projecting coarse aggregate need not be removed if they are sound, free of laitance, and firmly embedded into the parent concrete.

1. Air compressors used to clean surfaces in contact with grout shall be the oilless type or equipped with an oil trap in the airline to prevent oil from being blown onto the surface.

D. Remove all loose rust, oil, or other deleterious substances from metal embedments or bottom of baseplates before the installation of the grout.

E. Concrete surfaces shall be washed clean and then kept moist for at least 24 hours before the placement of cementitious or cement grout. Saturation may be achieved by covering the concrete with saturated burlap bags, use of a soaker hose, flooding the surface, or other method acceptable to the ENGINEER. Upon completion of the 24-hour period, visible water shall be removed from the surface before grouting. The use of an adhesive bonding agent in lieu of surface saturation shall only be used when approved by the ENGINEER for each specific location of grout installation.

F. Epoxy-based grouts do not require the saturation of the concrete substrate. Surfaces in contact with epoxy grout shall be completely dry before grouting.

G. Construct grout forms or other leak proof containment as required. Forms shall be lined or coated with release agents recommended by the grout manufacturer. Forms shall be of adequate strength, securely anchored in place and shored to resist the forces imposed by the grout and its placement.

1. Forms for epoxy grout shall be designed to allow the formation of a hydraulic head and shall have chamfer strips built into forms.

H. Level and align the structural elements or equipment bearing plates in accordance with the structural requirements and the recommendations of the equipment manufacturer.

I. Equipment shall be supported during alignment and installation of grout by shims, wedges, blocks, or other approved means. The shims, wedges, and blocking devices shall be

prevented from bonding to the grout by appropriate bond breaking coatings and removed after grouting unless otherwise approved by the ENGINEER.

3.02 INSTALLATION - GENERAL

A. Mix, apply, and cure products in strict compliance with the manufacturer's recommendations and this Section.

B. Have sufficient manpower and equipment available for rapid and continuous mixing and placing. Keep all necessary tools and materials ready and close at hand.

C. Maintain temperatures of the foundation plate, supporting concrete, and grout between 40 and 90 degrees Fahrenheit (F) during grouting and until grout compressive strength reaches 1,000 psi or as recommended by the grout manufacturer, whichever is longer. Take precautions to minimize differential heating or cooling of baseplates and grout during the curing period.

D. Take special precautions for hot weather or cold weather grouting as recommended by the manufacturer when ambient temperatures and/or the temperature of the materials in contact with the grout are outside of the 60–90 degrees F range.

E. Install grout in a manner that will preserve the isolation between the elements on either side of the joint where grout is placed in the vicinity of an expansion or control joint.

F. Reflect all existing underlying expansion, control, and construction joints through the grout.

3.03 INSTALLATION - CEMENT GROUTS AND NONSHRINK CEMENTITIOUS GROUTS

A. Mix in accordance with manufacturer's recommendations. Do not add cement, sand, pea gravel, or admixtures without prior approval by the ENGINEER.

B. Avoid mixing by hand. Mixing in a mortar mixer (with moving blades) is recommended. Pre-wet the mixer and empty excess water. Add pre-measured amount of water for mixing, followed by the grout. Begin with the minimum amount of water recommended by the manufacturer and then add the minimum additional water required to obtain workability. Do not exceed the manufacturer's maximum recommended water content.

C. Placements greater than 3 inches in depth shall include the addition of clean, washed pea gravel to the grout mix when approved by the manufacturer. Comply with the manufacturer's recommendations for the size and amount of aggregate to be added. Place grout into the designated areas in a manner that will avoid segregation or entrapment of air. Do not vibrate grout to release air or to consolidate the material. Placement should proceed in a manner that will ensure the filling of all spaces and provide full contact between the grout and adjoining surfaces. Provide grout holes as necessary.

D. Place grout rapidly and continuously to avoid cold joints. Do not place cement grouts in layers. Do not add additional water to the mix (retemper) after initial stiffening.

E. Just before the grout reaches its final set, cut back the grout to the substrate at a 45 degree angle from the lower edge of the bearing plate unless otherwise approved by the ENGINEER. Finish this surface with a wood float (brush) finish.

F. Begin curing immediately after form removal, cutback, and finishing. Keep grout moist and within its recommended placement temperature range for at least 24 hours after placement or longer if recommended by the manufacturer. Saturate the grout surface by use of wet burlap, soaker hoses, ponding, or other approved means. Provide sunshades as necessary. If drying winds inhibit the ability of a given curing method to keep grout moist, erect wind breaks until wind is no longer a problem or curing is finished.

3.04 INSTALLATION - NONSHRINK EPOXY GROUTS

A. Mix in accordance with the procedures recommended by the manufacturer. Do not vary the ratio of components or add solvent to change the consistency of the grout mix. Do not over mix. Mix full batches only to maintain proper proportions of resin, hardener, and aggregate.

B. Monitor ambient weather conditions and contact the grout manufacturer for special placement procedures to be used for temperatures below 60 or above 90 degrees F.

C. Place grout into the designated areas in a manner that will avoid trapping air. Placement methods shall ensure the filling of all spaces and provide full contact between the grout and adjoining surfaces. Provide grout holes as necessary.

D. Minimize "shoulder" length (extension of grout horizontally beyond baseplate). In no case shall the shoulder length of the grout be greater than the grout thickness.

E. Finish grout by puddling to cover all aggregate and provide a smooth finish. Break bubbles and smooth the top surface of the grout in conformity with the manufacturer's recommendations.

F. Epoxy grouts are self-curing and do not require the application of water. Maintain the formed grout within its recommended placement temperature range for at least 24 hours after placing, or longer if recommended by the manufacturer.

3.05 INSTALLATION - CONCRETE GROUT

A. Screed underlying concrete to the grade shown on the Drawings. Provide the surface with a broomed finish, aligned to drain. Protect and keep the surface clean until placement of the concrete grout.

B. Remove the debris and clean the surface by sweeping and vacuuming all dirt and other foreign materials. Wash the tank slab using a strong jet of water. Flushing of debris into tank drain lines will not be permitted.

C. Saturate the concrete surface for at least 24 hours before placement of the concrete grout. Saturation may be maintained by ponding, by the use of soaker hoses, or by other methods acceptable to the ENGINEER. Remove excess water just before placement of the concrete grout. Place a cement slurry immediately ahead of the concrete grout so that the slurry is moist when the grout is placed. Work the slurry over the surface with a broom until it is coated with an approximately 1/16 to 1/8-inch-thick cement paste. [(A bonding agent composed of 1 part Portland cement, 1.5 parts fine sand, an approved bonding admixture, and water, mixed to achieve the consistency of thick paint, may be substituted for the cement slurry.)]

D. Place concrete grout to final grade using the scraper mechanism as a guide for surface elevation and to ensure high and low spots are eliminated. Unless specifically approved by the equipment manufacturer, mechanical scraper mechanisms shall not be used as a finishing machine or screed.

E. Provide grout control joints as indicated on the Drawings.

F. Finish and cure the concrete grout as specified for cast-in-place concrete.

3.06 SCHEDULE

A. General Purpose Nonshrink Cementitious Grout - Use at all locations where nonshrink grout is called for on the Drawings except for baseplates greater in area than 3 feet wide by 3 feet long and except for the setting of anchor rods, anchor bolts, or reinforcing steel in concrete.

B. Flowable Nonshrink Cementitious Grout - Use under all baseplates greater in area than 3 feet by 3 feet. Use at all locations indicated to receive flowable nonshrink grout on the Drawings. The CONTRACTOR, at his/her option and convenience, may substitute flowable nonshrink grout for general purpose nonshrink cementitious grout.

C. Nonshrink Epoxy Grout - Use for the setting of anchor rods, anchor bolts, and reinforcing steel in concrete and for all locations specifically indicated to receive epoxy grout.

D. Cement Grout - Cement grout may be used for grouting of incidental baseplates for structural and miscellaneous steel such as post baseplates for platforms, baseplates for beams, etc. It shall not be used when nonshrink grout is specifically called for on the Drawings or for grouting of primary structural steel members such as columns and girders.

E. Concrete Grout - Use at all locations indicated on the Drawings to receive Concrete grout.

END OF SECTION

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SECTION 03740

MODIFICATIONS AND REPAIR TO CONCRETE

PART 1 - GENERAL

1.01 WORK INCLUDED

A. Furnish all labor, materials, equipment, and incidentals required to cut, remove, repair or otherwise modify parts of existing concrete structures as shown on the Drawings and as specified herein as necessary to complete the Work. Work under this Section shall also include bonding new concrete to existing concrete.

1.02 RELATED WORK

A. Related Work Specified Elsewhere:

1. Section 03100, Concrete Formwork.
2. Section 03150, Concrete Joints, and Joint Accessories.
3. Section 03200, Concrete Reinforcement.
4. Section 03300, Cast-in-Place Concrete.
5. Section 03600, Grout.

1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

A. American Society for Testing and Materials (ASTM)

1. ASTM C881 – Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.
2. ASTM C882 - Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete.
3. ASTM C883 - Test Method for Effective Shrinkage of Epoxy-Resin Systems Used with Concrete.
4. ASTM D570 - Test Method for Water Absorption of Plastics.
5. ASTM D638 - Standard Test Method for Tensile Properties of Plastic.
6. ASTM D695 - Test Method for Compressive Properties of Rigid Plastic.
7. ASTM D732 - Standard Test Method for Shear Strength of Plastics by Punch Tool.
8. ASTM D790 - Standard Test Methods for Flexural Properties of Unreinforced Plastic and Electrical Insulating Materials.

B. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.04 SUBMITTALS

A. All submittals shall be in accordance with Division 1.

B. Submit manufacturer's technical literature on all product brands proposed for use by the CONTRACTOR, to the ENGINEER for review. The submittal shall include the manufacturer's installation and/or application instructions.

C. When substitutions for acceptable brands of materials specified herein are proposed by the CONTRACTOR, submit brochures and technical data of the proposed substitutions to the ENGINEER for approval before delivery to the jobsite.

1.05 QUALITY ASSURANCE

A. No existing structure or concrete shall be shifted, cut, removed, or otherwise altered until authorization is given by the ENGINEER.

B. When removing materials or portions of existing structures and when making openings in existing structures, all precautions shall be taken and all necessary barriers, shoring and bracing and other protective devices shall be erected to prevent damage to the structures beyond the limits necessary for the new work, protect personnel, control dust and to prevent damage to the structures or contents by falling or flying debris. Unless otherwise permitted, shown or specified, line drilling will be required in cutting existing concrete.

C. Manufacturer qualifications: The manufacturer of the specified products shall have a minimum of ten years experience in the manufacture of such products and shall have an ongoing program of training, certifying and technically supporting the CONTRACTOR's personnel.

D. Contractor qualifications: Contractors shall complete a program of instruction in the application of the approved manufacturer's material specified in this Section and provide certification from the manufacturer attesting to their training and status as an approved applicator.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the jobsite in original, unopened packages, clearly labeled with the manufacturer's name, product identification, batch numbers and printed instructions.

B. Store materials in full compliance with the manufacturer’s recommendations.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

A. The use of a manufacturer’s name and model or catalog number is for the purpose of establishing the standard of quality and general configuration desired.

B. Materials shall comply with this Section and any applicable State or Local requirements.

2.02 MATERIALS

A. Epoxy Bonding Agent:

1. Epoxy bonding agent shall be a two-component, solvent-free, moisture insensitive epoxy resin material used to bond plastic concrete to hardened concrete complying with the requirements of ASTM C881, Type II.

2. Color shall be concrete gray.

3. Product shall be Sikadur 32 Hi-Mod by Sika Corporation; MasterEmaco ADH 326 by Master Builders Solutions; or approved equal.

B. Epoxy Paste:

1. Epoxy paste shall be a two-component, solvent-free, moisture insensitive epoxy resin material used to bond dissimilar materials to concrete such as setting railing posts, dowels, anchor bolts, and all-thread rods into hardened concrete and shall comply with the requirements of ASTM C881, Type I, Grade 3. It may also be used to patch existing surfaces where the glue line is 1/8-in or less.

2. Color shall be concrete gray.

3. Product shall be Sikadur 31 Hi-Mod Gel by Sika Corporation; Concresive Paste LPL by BASF Building Systems; or approved equal.

C. Nonshrink Grout and Nonshrink Epoxy Grout shall be as specified in Section 03600.

D. Adhesive anchors shall be as specified in Section 05500.

E. Crack Repair Epoxy Adhesive:

1. Unless otherwise directed by the ENGINEER, crack repair products and methodolgies shall meet the minimum standards delineated in ACI SPEC-548.15, *Specification for Crack Repair by Epoxy Injection*.

2. Crack Repair Epoxy Adhesive shall be a two-component, solvent-free moisture insensitive epoxy resin material suitable for crack grouting by injection or gravity feed. It shall be formulated for the specific size of opening or crack being injected.

3. For standard applications, product shall be Sikadur 35 Hi-Mod LV by Sika Corporation; SCB Concresive 1380 by BASF Building Systems; or approved equal.

PART 3 - EXECUTION

3.01 GENERAL

A. Cut, repair, reuse, demolish, excavate or otherwise modify parts of the existing structures, as indicated on the Drawings, specified, or necessary to permit completion of the Work. Finishes, joints, reinforcements, sealants, etc. are specified in other Sections of this Specification. All work shall comply with other requirements of this Section and as shown on the Drawings.

B. All commercial products specified in this Section shall be stored, mixed, and applied in strict compliance with the manufacturer's recommendations.

C. In all cases where concrete is repaired in the vicinity of an expansion joint or control joint the repairs shall be made to preserve the isolation between components on either side of the joint.

D. When drilling holes for dowels/bolts at new or existing concrete, drilling shall stop if rebar is encountered. As approved by the ENGINEER, the hole location shall be relocated to avoid rebar. The CONTRACTOR shall not cut rebar without prior approval. Where possible, rebar locations shall be identified prior to drilling using "rebar locators" so that drilled hole locations may be adjusted to avoid rebar interference.

E. When coring new openings at new or existing concrete, the CONTRACTOR shall identify existing rebar locations using “rebar locators”. Where possible and as approved by the ENGINEER, the CONTRACTOR shall locate the new hole to avoid and/or minimize rebar interference. The CONTRACTOR shall not cut existing rebar without prior approval from the ENGINEER.

3.02 CONCRETE REMOVAL

A. Concrete designated to be removed to specific limits as shown on the Drawings or directed by the ENGINEER, shall be done by line drilling at limits followed by chipping or jack-hammering as appropriate in areas where concrete is to be taken out. Remove concrete in such a manner that surrounding concrete or existing reinforcing to be left in place and existing in place equipment is not damaged. Sawcutting at limits of concrete to be removed shall only be done if indicated on the Drawings, or after obtaining written approval from the ENGINEER.

B. Where existing reinforcing is exposed due to saw cutting/core drilling and no new material is to be placed on the saw cut surface, a coating or surface treatment of epoxy paste shall be applied to the entire cut surface to a thickness of 1/4-in.

C. In all cases where the joint between new concrete or grout and existing concrete will be exposed in the finished work, except as otherwise shown or specified, the edge of concrete removal shall be a 1-in deep saw cut on each exposed surface of the existing concrete.

D. Concrete specified to be left in place that is damaged by the CONTRACTOR shall be repaired by approved means to the satisfaction of the ENGINEER and at no additional cost to the OWNER.

E. The ENGINEER may from time to time direct the CONTRACTOR to make additional repairs to existing concrete. These repairs shall be made as specified or by such other methods as may be appropriate.

3.03 CONNECTION SURFACE PREPARATION

A. Connection surfaces shall be prepared as specified below for concrete areas requiring patching, repairs or modifications as shown on the Drawings, specified, or as directed by the ENGINEER.

B. Remove all deteriorated materials, dirt, oil, grease, and all other bond inhibiting materials from the surface by dry mechanical means, i.e. - sandblasting, grinding, etc., as approved by the ENGINEER. Surfaces shall be roughened to a full amplitude of at least 1/2-in in depth. Irregular voids or surface stones need not be removed if they are sound, free of laitance, and firmly embedded into parent concrete, subject to the ENGINEER's final inspection.

C. If reinforcing steel is exposed, it must be mechanically cleaned to remove all contaminants, rust, etc., as approved by the ENGINEER. If half of the diameter of the reinforcing steel is exposed, chip out behind the steel. The distance chipped behind the steel shall be a minimum of 1/2-in. Reinforcing to be saved shall not be damaged during the demolition operation.

D. Reinforcing from existing demolished concrete that is shown to be incorporated in new concrete shall be cleaned by mechanical means to remove all loose material and products of corrosion before proceeding with the repair. It shall be cut, bent or lapped to new reinforcing as shown on the Drawings and provided with one-inch minimum cover all around.

E. The following are specific concrete surface preparation and connection "methods" to be used where called for on the Drawings, specified or as directed by the ENGINEER.

1. Method A - After the existing concrete surface at the connection has been roughened and cleaned, thoroughly saturate and maintain saturation for a period of at least 12 hours. Brush on a 1/16-in layer of cement and water mixed to the consistency of a heavy paste. Immediately after application of cement paste, place new concrete or grout mixture as detailed on the Drawings.

2. Method B – After the existing concrete surface has been roughened and cleaned, apply epoxy-bonding agent at connection surface. The field preparation and application of the epoxy-bonding agent shall comply strictly with the manufacturer's recommendations. Place new concrete or grout mixture to limits shown on the Drawings within time constraints recommended by the manufacturer to ensure bond.

3. Method C - Adhesive anchors shall be set in existing concrete by drilling holes to the required depth to develop the full tensile and shear strengths of the anchor material being used. The adhesive anchor system shall be installed per the manufacturer's recommendation in holes sized as required. Unless otherwise shown on the Drawings, deformed bars shall be drilled and set to a depth of ten bar diameters and smooth bars shall be drilled and set to a depth of 15 bar diameters. The anchor may be installed in horizontal, vertical and overhead positions as indicated on the Drawings. The allowable tensile value for anchors installed in overhead positions shall be limited to 50% of the ICC ES published allowable value.

4. Method D - Combination of Method B and C.

3.04 GROUTING

A. Grouting shall be as specified in Section 03600.

3.05 CRACK REPAIR

A. Cracks on horizontal surfaces shall be repaired by gravity feeding crack repair adhesive into cracks per manufacturer's recommendations. If cracks are less than 1/16-in in thickness they shall be pressure injected.

B. Cracks on vertical surfaces shall be repaired by pressure injecting crack repair adhesive through valves sealed to the surface with crack repair epoxy adhesive per manufacturer's recommendations.

END OF SECTION

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SECTION 05500

MISCELLANEOUS METALS

PART 1 - GENERAL

1.01 THE REQUIREMENT

A. Furnish all labor, materials, equipment and incidentals required and install all miscellaneous metal complete as shown on the Drawings and as specified herein.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 03100 - Concrete Formwork

B. Section 03150 - Concrete Joints and Joint Accessories

C. Section 03200 - Concrete Reinforcement

D. Section 03300 - Cast-in-Place Concrete

E. Section 03600 - Grout

F. Section 03740 - Modifications and Repair to Concrete

G. Section 09960 - High Performance Coatings

H. Section 09970 - Mechanical Zinc Coating

I. Section 09972 - Hot-Dip Zinc Coating

1.03 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

A. Federal Specifications:

1. DOD-P-21035 - Paint, High Zinc Dust Content, Galvanizing Repair
2. FF-B-575C - Bolts, Hexagonal and Square
3. MIL-G-18015 A (3) - (Ships) Aluminum Planks (6063-T6)
4. MIL-A-907E - Antiseize Thread Compound, High Temperature
5. MIL-P-26915 - Primer Coating, Zinc Dust Pigment

B. Aluminum Association (AA):

1. AA-M32C22A41 - M31 - Mechanical Finish, Fine Satin; C22 - Finish, Medium Matte; A41 - Clear Anodic Coating, Class I

C. American Association of State Highway and Transportation Officials (AASHTO):

1. Standard Specifications for Highway Bridges - HS20 Truck Loading

D. American Concrete Institute (ACI):

1. ACI 355.2 - Qualification of Post-Installed Mechanical Anchors in Concrete
2. ACI 355.4 - Qualification of Post-Installed Adhesive Anchors in Concrete

E. American Institute of Steel Construction (AISC):

1. Manual of Steel Construction - Allowable Stress Design

F. American Iron and Steel Institute (AISI):

1. Design of Light Gauge, Cold-Formed Steel Structural Members

G. American Society for Testing and Materials (ASTM):

1. ASTM-A6 - Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling
2. ASTM A36 - Standard Specification for Carbon Structural Steel
3. ASTM A48 - Standard Specification for Gray Iron Castings
4. ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless
5. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold Finished
6. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
7. ASTM A125 - Standard Specification Steel Springs, Helical, Heat Treated
8. ASTM A153 - Standard Specification Zinc Coating (Hot-Dip) on Iron and Steel Hardware
9. ASTM A167 - Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip
10. ASTM A193 - Standard Specification for Alloy Steel and Stainless Steel Bolting Materials for High Temperature or High Pressure Service and other Special Purpose Applications
11. ASTM A194 - Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both
12. ASTM A276 - Standard Specification for Stainless Steel Bars and Shapes
13. ASTM A307 - Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength
14. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 KSI Minimum Tensile Strength
15. ASTM A384 Standard Practice for Safeguarding Against Warpage and Distortion During Hot-Dip Galvanizing of Steel Assemblies
16. ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
17. ASTM A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing
18. ASTM A536 - Standard Specification for Ductile Iron Castings
19. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts
20. ASTM A575 - Standard Specification for Steel Bars, Carbon, Merchant Quality, M-Grades
21. ASTM A780 - Standard Practice for Repair of Damage and Uncoated Areas of Hot-Dipped Galvanized Coatings
22. ASTM A786 - Standard Specification for Hot-Rolled Carbon, Low Alloy, High Strength Low Alloy and Alloy Steel Floor Plates
23. ASTM A992 - Standard Specification for Structural Steel Shapes

24. ASTM A1008 - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, Bake Hardenable

25. ASTM A1011 - Standard Specification for Steel, Sheet and Strip, Hot-Rolled Carbon, Structural, High-Strength Low-Alloy and Ultra-High Strength, and High-Strength Low-Alloy with Improved Formability

26. ASTM B98 - Standard Specification for Copper-Silicon Alloy Rod, Bar, and Shapes

27. ASTM B201 - Standard Practice for Testing Chromate Coatings on Zinc and Cadmium Surfaces

28. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate

29. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles and Tubes

30. ASTM B429 - Standard Specification for Aluminum-Alloy Extruded Structural Pipe and Tube

31. ASTM B695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel

32. ASTM C633 - Standard Test Method for Adhesion or Cohesion Strength of Thermal Spray Coatings

33. ASTM D6386 - Standard Practice for Preparation of Zinc (Hot-Dipped Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Painting

34. ASTM E140 - Hardness Conversion Tables for Metals

35. ASTM E376 Standard Practice for Measuring Coat Thicknesses by Magnetic-Field or Eddy-Current (Electromagnetic) Examination Methods

36. ASTM E384 - Micro Hardness of Materials

37. ASTM F593 - Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs

38. ASTM F594 - Standard Specification for Stainless Steel Nuts

39. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength

H. American Welding Society (AWS)

1. ANSI/AWS D1.1- Structural Welding Code - Steel

2. ANSI/AWS D1.2 - Structural Welding Code - Aluminum

3. ANSI/AWS QC1 - Qualification and Certification of Welding Inspectors

I. National Fire Protection Association (NAFP):

1. NFPA 101 - Life Safety Code

J. National Association of Corrosion Engineers (NACE)

1. Coating Inspector Program (CIP)

K. Where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.04 SUBMITTALS

A. Shop Drawings - Shop drawings of all miscellaneous metalwork shall be submitted to the ENGINEER for review in accordance with Division 1.

B. An International Code Council Evaluation Services (ICC-ES) report listing the ultimate load capacity in tension and shear for each size and type of concrete anchor used shall be submitted to the ENGINEER for review. The CONTRACTOR shall submit manufacturer's recommended installation instructions and procedures for all adhesive anchors for ENGINEER's review. Upon review, by ENGINEER, these instructions shall be followed explicitly.

C. No substitution for the indicated adhesive anchors will be considered unless accompanied with ICC-ES report verifying strength and material equivalency, including temperature at which load capacity is reduced to 90 percent of that determined at 75 degrees Fahrenheit (F).

D. Samples:

1. Submit samples for verification of each type of mechanical equipment stanchions/rails, pipe frame supports, and FRP metal platform systems for verification of each type of exposed finish required, prepared in components of the same thickness and metal indicated for the final Work. Where finishes involve normal color and texture variations, include sample sets showing the full range of variations expected.

E. Design Data:

1. Mechanical equipment stanchions/rails, pipe frame supports, and FRP metal platform systems:

a. Submit design calculations, signed and sealed by a Civil or Structural Engineer, licensed in the State of California.

b. Submit data showing the location, magnitude, and direction of all dead, live, wind and seismic load reactions imposed on the anchoring surfaces.

F. Test Reports:

1. Submit a certified copy of mill test reports on each steel proposed for use showing the physical properties and chemical analysis.

G. Certificates:

1. Submit a certified copy of mill test reports on each steel proposed for use showing the physical properties and chemical analysis.

2. Submit coating applicator’s Certificate of Compliance that the prepared, hot-dipped, galvanized coating surface meets or exceeds the requirements for successful painting of the surface.

1.05 QUALITY ASSURANCE

A. The work of this Section shall be completely coordinated with the work of other Sections. Verify, at the site, both the dimensions and work of other trades adjoining items of work in this Section before fabrication and installation of items herein specified.

B. Furnish to the pertinent trades all items included under this Section that are to be built into the work of other Sections.

C. All welding shall be performed by qualified welders and shall conform to the applicable AWS welding code. Welding of steel shall conform to AWS D1.1 and welding of aluminum shall conform to AWS D1.2.

D. All welding procedures and welder qualification shall be available in the CONTRACTOR's field office for ENGINEER's review.

E. All welding shall be inspected by an OWNER-provided inspector qualified in accordance with AWS requirements and approved by the ENGINEER.

F. Unless otherwise directed by the ENGINEER, the CONTRACTOR shall provide the services of an independent, NACE-certified coating inspector. The cost of such work, except as specifically stated otherwise, shall be paid by the CONTRACTOR. All shop-applied coatings shall be inspected by an inspector, qualified in accordance with NACE requirements and approved by the ENGINEER.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver items to be incorporated into the work of other trades in sufficient time to be checked before installation.

B. Items damaged during transit, inadequate storage, improper handling, or corroded shall be repaired, at the CONTRACTOR's expense, to the satisfaction of the ENGINEER before incorporating them into the work.

1.07 PROJECT/SITE REQUIREMENTS

A. Field measurements shall be taken at the site, before fabrication of items, to verify or supplement indicated dimensions and to ensure proper fitting of all items.

PART 2 - PRODUCTS

2.01 GENERAL REQUIREMENTS

A. The use of manufacturer's name and model or catalog number is for the purpose of establishing the standard of quality and general configuration desired.

B. Like items of materials shall be the end products of one manufacturer in order to provide standardization for appearance, maintenance, and manufacturer's service.

C. Steel shall be as listed below, unless otherwise noted:

1. Shapes, Plates, Bars: ASTM A36, unless otherwise noted.

2. Wide-flange structural steel shapes: ASTM A992.

3. Pipe, Pipe Columns, Bollards: ASTM A53, Type E or S, Grade B Standard weight unless noted otherwise.

4. Tubes: ASTM A500 Grade B.

5. Corrosion Protection - Unless otherwise indicated, miscellaneous metalwork of fabricated steel that will be used in a corrosive environment and/or will be submerged in water/wastewater shall be coated with protective coating. All other miscellaneous steel metalwork shall be hot-dip galvanized after fabrication as specified herein, if applicable.

D. Stainless steel shall be as listed below, unless otherwise noted:

1. Exterior - Stainless steel plates, sheets, and structural shapes ASTM A167, Type 316 (Type 316L for welding) stainless steel and shall not be galvanized. Where anaerobic conditions are noted, Type 304 stainless steel shall be used.

2. Interior - Stainless steel plates, sheets, and structural shapes ASTM A167, Type 316.

E. Aluminum shall be as listed below, unless otherwise noted:

1. Extruded Pipe ASTM B429, Alloy 6063-T6.

2. Extruded Shapes ASTM B221, Alloy 6061-T6.

3. Sheet and Plate ASTM B209, Alloy 6061-T6.

F. Cast iron shall be as listed below, unless otherwise noted:

1. Iron castings shall conform to the requirements of ASTM A48, Class 50B or better.

G. Bolts, nuts, and washers shall be as listed below, unless otherwise noted:

1. Carbon Steel Bolts and Studs ASTM A307, Grade A (hot-dip galvanized nuts and washers where noted).

2. Carbon Steel Anchor Bolts for Building Anchorage, ASTM F1554 Grade 36, unless otherwise noted (hot-dip galvanized nuts and washers where noted).

3. Stainless Steel Bolts, Nuts, and Washers, ASTM F593 and ASTM F594, Type 316.

4. High-Strength Steel Bolts, Nuts, and Washers, ASTM A325 (mechanically galvanized per ASTM B695, Class 50, where noted).

a. Elevated Temperature, Exposure Type I.

b. General Application, Type I or Type II.

H. Galvanizing shall be ASTM A123, Zinc with 0.04 percent to 0.07 percent nickel added for steels with silicone content between 0.03 percent and 0.22 percent.

I. Galvanizing shall be Hardware ASTM A153, Zinc with 0.04 percent to 0.07 percent nickel added for steels with silicone content between 0.03 percent and 0.22 percent.

J. Duplex System - Galvanizing shall satisfy the requirements of ASTM A123 or A153, as applicable. Water quenching or chromate conversion coating shall be avoided as these processes may interfere with paint adhesion and surface preparation.

2.02 MISCELLANEOUS STEEL

A. All miscellaneous metal work shall be formed true to detail, with clean, straight, sharply defined profiles and smooth surfaces of uniform color and texture and free from defects impairing strength or durability. Holes shall be drilled or punched. Edges shall be smooth and without burrs. Fabricate supplementary pieces necessary to complete each item even if such pieces are not definitively shown or specified.

B. Connections and accessories shall be of sufficient strength to safely withstand the stresses and strains to which they will be subjected. Exposed joints shall be close-fitting and jointed where least conspicuous. Threaded connections shall have the threads concealed where practical. Welded connections shall have continuous welds or intermittent welds as specified or shown. The face of welds shall be dressed flush and smooth. Provide holes for temporary field connections and for attachment of the work of other trades.

C. Miscellaneous steel items shall include beams, angles, lintels, metal stairs, support brackets, baseplates for other than structural steel or equipment, closure angles, bridge crane rails, monorail hoist beams, hold-down straps and lugs, door frames, splice plates, sub-framing at roof openings and any other miscellaneous steel called for on the Drawings and not otherwise specified.

D. Steel pipe pieces for sleeves, lifting attachments, and other functions shall be Schedule 40 pipe unless otherwise shown on the Drawings. Wall and floor sleeves of steel pipe shall have welded circumferential steel waterstops at mid-length.

E. All steel finish work shall be thoroughly cleaned, by effective means, of all loose mill scale, rust, and foreign matter and shall be given one shop coat of primer compatible with the finish coat after fabrication but before shipment. Paint shall be omitted within 3 inches of

proposed field welds. Paint shall be applied to dry surfaces and shall be thoroughly and evenly spread and well worked into joints and other open spaces.

F. Galvanizing, where required, shall be the hot-dip zinc process after fabrication. Coating shall be not less than 2 ounces per square foot of surface.

2.03 MISCELLANEOUS STAINLESS STEEL

A. All miscellaneous metal work shall be formed true to detail, with clean, straight, sharply defined profiles and smooth surfaces of uniform color and texture and free from defects impairing strength or durability. Holes shall be drilled or punched. Edges shall be smooth and without burrs. Fabricate supplementary pieces necessary to complete each item even if such pieces are not definitively shown or specified.

B. Connections and accessories shall be of sufficient strength to safely withstand the stresses and strains to which they will be subjected. Exposed joints shall be close-fitting and jointed where least conspicuous. Threaded connections shall have the threads concealed where practical. Welded connections shall have continuous welds or intermittent welds as specified or shown. The face of welds shall be dressed flush and smooth. Provide holes for temporary field connections and for attachment of the work of other trades.

C. Miscellaneous stainless steel items shall include beams, angles, bar racks, and any other miscellaneous stainless steel called for on the Drawings and not otherwise specified.

2.04 MISCELLANEOUS FRAMING AND SUPPORTS

A. Fabricate miscellaneous units to the sizes, shapes, and profiles shown or, if not shown, of the required dimensions to receive adjacent grating, plates, tanks, doors, or other work to be retained by the framing. Except as otherwise shown, fabricate from structural shapes, plates, and bars, of all welded construction using mitered corners, welded brackets, and splice plates and a minimum number of joints for field connection. Cut, drill, and tap units to receive hardware and similar items to be anchored to the Work.

B. Equipment units with integrally welded anchors for casting into concrete. Furnished inserts for units must be installed after concrete is placed.

C. Except as otherwise shown, space anchors, 24 inches on-center, and provide units equivalent of 1 1/4-inch by 1 1/4-inch by 8-inch strips.

D. Galvanize all miscellaneous framing and supports, unless otherwise specified on the project documents.

2.05 FRAMING SUPPORT SYSTEMS FOR PIPE ASSEMBLIES, ANALYZERS, AND APPURTENANCES

A. Provide framing support systems for pipe assemblies shown on the Contract Drawings.

B. Furnish and install all anchoring and connecting hardware required for assembly and installation of the framing support system(s).

C. All anchoring and connecting hardware shall be Type 316 Stainless Steel.

D. All exterior framing support systems, and all systems within sub-grade vaults, for pipe assemblies and appurtenances shall be fabricated of Type 316 Stainless Steel.

E. All framing support systems that are used in interior, non-submerged applications shall be fabricated of low-carbon steel and furnished with a factory-applied, hot-dipped, galvanized coating.

F. Where framing support systems are shown in locations with no adjacent wall, the framing support system shall be free-standing and designed to withstand a point load of 200 pounds applied at the top of the framing system such that the maximum deflection shall

not exceed 1/4 inch. Base support members shall be a minimum of 2 feet long and shall use Unistrut P2348 connectors, or approved equal.

G. Manufacturer - Unless otherwise shown, all members shall be P1000, manufactured by Unistrut, or approved equal, with type "HS" hole pattern.

2.06 BOLTS AND ANCHORS

A. Standard Service (Non-Corrosive Application): Unless otherwise indicated, bolts, anchor bolts, washers, and nuts shall be steel, galvanized after fabrication as indicated herein. Threads on galvanized bolts and nuts shall be formed with suitable taps and dies such that they retain their normal clearance after hot-dip galvanizing. Except as otherwise indicated, steel for bolts, anchor bolts, and cap screws shall be in accordance with the requirements of ASTM A307, Grade A.

B. Corrosive Service: All bolts, nuts, and washers in the locations listed below shall be stainless steel as indicated below.

1. All buried locations
2. All submerged locations
3. All locations subject to seasonal or occasional flooding
4. Inside hydraulic structures below the top of the structure
5. Inside buried vaults, manholes, and structures that do not drain through a gravity sewer or to a sump with a pump
6. All chemical handling areas
7. Inside trenches, containment walls, and curbed areas
8. All post-installed anchors NOT installed in dry, interior locations
9. Locations indicated on the Contract Documents or designated by the ENGINEER to be provided with stainless steel bolts

C. All bolted connections for aluminum members shall be stainless steel.

D. Unless otherwise indicated, stainless steel bolts, anchor bolts, nuts, and washers shall be Type 316 stainless steel, class 2, conforming to ASTM A276. All threads on stainless steel bolts shall be protected with an antiseize lubricant suitable for submerged stainless steel bolts, to meet government specification MIL-A-907E. Buried bolts in poorly drained soil shall be coated the same as the buried pipe.

1. Antiseize lubricant shall be classified as acceptable for potable water use by the NSF.
2. Antiseize lubricant shall be "PURE WHITE" by Anti-Seize Technology, Franklin Park, IL; or approved equal.

E. Bolt Requirements:

1. The bolt and nut material shall be free-cutting steel.
2. The nuts shall be capable of developing the full strength of the bolts. Threads shall be Coarse Thread Series conforming to the requirements of the American Standard for Screw Threads. All bolts and cap screws shall have hexagon heads and nuts shall be Heavy Hexagon Series.
3. All bolts and nuts shall be installed with washers fabricated of material matching the base material of bolts, except that hardened washers for high strength bolts shall conform to the requirements of the AISC Specification. Lock washers shall

be installed with washers where indicated and shall be fabricated of material matching the bolts.

4. The length of all bolts shall be such that after joints are made up, each bolt shall extend through the entire nut, but in no case more than 1/2 inch beyond the nut.

F. Cast-in-Place Anchor Bolts - Unless otherwise indicated, the embedded end of the anchor bolt shall be either headed or with nut and washer. Threaded dimensions for cast-in headed studs and/or headed bolts, before zinc coating, shall conform to the requirements of ANSI/ASME B1.1 having Class 2A tolerances (ANSI/ASME Standard B1.13M Grade 6g). Use of hooked bolts (J-bolts and L-bolts) in lieu of headed studs/bolts is not permissible.

1. Equipment subject to vibration (e.g., pumps, motors, generators, etc.) shall be anchored by means of cast-in-place anchor bolts. Anchor bolt layout shall be by means of a template obtained from the equipment manufacturer or supplier.

G. Adhesive Anchors in Concrete - Unless otherwise indicated, all adhesive anchors for installation in concrete shall have satisfied the requirements of the Simulated Seismic Tests of ACI 355.4. No substitutions will be considered unless accompanied with ICC-ES report verifying strength and material equivalency and compliance with ACI 355.4.

1. Adhesive anchors shall be Hilti HIT-RE 500-V3 adhesive anchors, Simpson SET-3G epoxy adhesive anchors, Dewalt Pure 110+ adhesive anchors or approved equal.

2. Use of adhesive anchors within enclosed areas subject to hydrogen sulfide build up shall be approved for use in sulfuric acid environments.

3. Adhesive anchors shall not be used for overhead installations (i.e. installations at the underside of concrete slabs).

H. Expansion (Wedge) Anchors - Unless otherwise indicated all expansion anchors for installation in concrete shall have satisfied the requirements of the Simulated Seismic Tests of ACI 355.2. Expansion Anchors shall be zinc-plated carbon steel wedge-type anchors complete with nuts and washers. Type 316 stainless steel, wedge type anchors shall be used where they will be submerged or exposed to the weather or where stainless steel wedge type anchors are required. When the length or embedment of the bolt is not noted on the Drawings, provide length sufficient to place the wedge and expansion sleeve portion of the bolt at least 1 inch behind the concrete reinforcing steel.

1. Design and installation of the expansion anchors in concrete shall comply with ACI 318 Appendix D.

2. Expansion anchors shall be Hilti Kwik Bolt TZ anchors, Simpson Strong-Tie Strong-Bolt 2 Wedge anchors, Dewalt Power-Stud+SD2 anchors, or approved equal.

3. Lead caulking anchors will not be permitted.

4. Expansion type anchors shall not be used with equipment subject to vibration (e.g., pumps, motors, etc.).

PART 3 - EXECUTION

3.01 FABRICATION AND INSTALLATION REQUIREMENTS

A. Fabrication and Erection: Except as otherwise indicated, the fabrication and erection of structural steel shall conform to the requirements of the AISC "Manual of Steel Construction."

B. All steel surfaces that come into contact with exposed concrete shall receive a protective coating of an approved heavy bitumastic troweling mastic applied in accordance with the manufacturer's instructions before installation.

C. Where aluminum contacts a dissimilar metal, apply a heavy brush coat of zinc-chromate primer followed by two coats of aluminum metal and masonry paint to the dissimilar metal.

D. Where aluminum contacts concrete/masonry, apply one coat of TT-P-645B zinc-molybdate primer or a heavy coat of approved alkali resistant bituminous paint to the aluminum or concrete/masonry.

3.02 WELDING

A. Method - All welding shall be by the metal-arc method or gas-shielded arc method as described in the AWS 's "Welding Handbook" as supplemented by other pertinent standards of the AWS. Qualification of welders shall be in accordance with the AWS Standards governing same.

B. Welding electrodes shall meet the minimum requirements of E70XX. Filler metal for welds in moment connections shall have a minimum CVN value of 20 foot-pounds at 0 degrees F.

C. Quality - In assembly and during welding, the component parts shall be adequately clamped, supported, and restrained to minimize distortion and for control of dimensions. Weld reinforcement shall be as indicated by the AWS Code. Upon completion of welding, all weld splatter, flux, slag, and burrs left by attachments shall be removed. Welds shall be repaired to produce a workmanlike appearance, with uniform weld contours and dimensions. All sharp corners of material that is to be painted or coated shall be ground to a minimum of 1/32 inch on the flat.

3.03 GALVANIZING

A. All structural steel plates shapes, bars, and fabricated assemblies required to be galvanized shall, after the steel has been thoroughly cleaned of rust and scale, be galvanized in accordance with the requirements of ASTM A123, except that the weight of zinc coating shall average not less than 1.2 ounce per-square-foot of actual surface area with no individual specimen having a coating weight less than 1.0 ounce per-square-foot. The galvanizing process shall be performed in strict accordance with the requirements of ASTM A384, any galvanized part(s) that become warped as a result of the galvanizing process and/or handling shall be straightened or replaced at no additional expense to the OWNER.

B. Bolts, anchor bolts, nuts, and similar threaded fasteners, after being properly cleaned, shall be galvanized in accordance with the requirements of ASTM A153.

C. Repair of Damaged Coating:

1. The maximum area that shall be repaired shall comply with applicable sections of ASTM A123.

2. Repair areas by one of the approved methods in accordance with ASTM A780 whenever damage width exceeds 3/16 inch. Minimum thickness requirements for the repair shall be as described in ASTM A123.

3. Field repairs to galvanizing shall be made using “Galvinox”, “Galvo-Weld”, or approved equal.

3.04 POST-INSTALLED CONCRETE ANCHORS

A. Drilled anchors and reinforcing bars shall be installed in strict accordance with the manufacturer's instructions.

B. Post-installed concrete anchors and reinforcing bars (dowels) shall be installed in strict accordance with the Manufacturer's Printed Installation Instructions (MPII).

C. Holes shall be roughened with a brush on a power drill, cleaned, and dry.

D. Drilled anchors shall not be installed until the concrete has reached the specified 28-day compressive strength.

E. Adhesive anchors and dowels shall not be installed until the concrete has a minimum age of 21 days and has reached the specified 28-day compressive strength.

F. Adhesive anchors shall not be loaded until the adhesive has reached its indicated strength in accordance with the manufacturer's instructions.

G. Adhesive anchors and dowels installed in a horizontal or upwardly inclined position shall have the following additional requirements:

1. Installation shall be performed by personal certified in accordance with the ACI/CRSI Adhesive Anchor Certification program.

2. Installation shall be inspected by a certified special inspector who is continuously present when the installation is performed.

H. Expansion anchors shall be checked for tightness a minimum of 24 hours after initial installation. Install anchors using the manufacturer's recommended drive units and adapters and in compliance with the manufacturer's recommendations.

I. Post-installed mechanical anchors shall be checked for tightness a minimum of 24-hours after initial installation. Install anchors using the manufacturer's recommended drive units and adapters, in compliance with the manufacturer's recommendations.

END OF SECTION

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SECTION 09960

HIGH PERFORMANCE COATINGS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Materials, surface preparation, application, curing and inspection on interior and exterior surfaces for industrial, high-performance coatings.

B. Furnish all labor, materials, tools and equipment required to perform surface preparation, coating work and inspection as specified. Perform all subsidiary and incidental work necessary to complete the work in conformance with the project requirements, to accomplish the approved end result of a totally protected and usable structure, including all attachments, accessories and appurtenances.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 01330 – Submittals
2. Section 01999 – Referenced Sections

1.03 GOVERNING STANDARDS AND RECOMMENDED PRACTICES

A. Standards and recommended practices listed (including the most recent update or version) shall govern the work unless otherwise specified in these specifications.

B. ASTM – American Society for Testing and Materials

1. ASTM C308, Standard Test Methods for Working, Initial Setting, and Service Strength Setting Times of Chemical-Resistant Resin Mortars
2. ASTM C496, Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens
3. ASTM C531, Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes
4. ASTM C579, Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes
5. ASTM C580, Standard Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes
6. ASTM C596, Standard Test Method for Drying Shrinkage of Mortar Containing Hydraulic Cement
7. ASTM C868, Standard Test Method for Chemical Resistance of Protective Linings
8. ASTM C882, Standard Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete By Slant Shear
9. ASTM D638, Standard Test Method for Tensile Properties of Plastics
10. ASTM D790, Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials

11. ASTM D1653, Standard Test Methods for Water Vapor Transmission of Organic Coating Films
12. ASTM D4417, Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel
13. ASTM D4541, Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
14. ASTM D4585, Standard Practice for Testing Water Resistance of Coatings Using Controlled Condensation
15. ASTM D4940, Detecting Contamination on Abrasive
16. ASTM D5402, Standard Practice for Assessing the Solvent Resistance of Organic Coatings Using Solvent Rubs
17. ASTM D6386, Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Painting

C. AWWA – American Water Works Association

1. AWWA D102, Standard for Painting Steel Water-Storage Tanks.
2. AWWA C652, Disinfections of Water Storage Facilities.

D. SSPC – The Society for Protective Coatings

1. SSPC- Vol. 1, Steel Structures Painting Manual, Good Painting Practice
2. SSPC- Vol. 2, Steel Structures Painting Manual, Systems and Specifications
3. SSPC-SP1, Solvent Cleaning
4. SSPC-SP2, Hand Tool Cleaning
5. SSPC-SP3, Power Tool Cleaning
6. SSPC-SP11, Power Tool Cleaning to Bare Metal
7. SSPC-SP15, Commercial Grade Power Tool Cleaning
8. SSPC-Guide 12, Illumination of Industrial Painting Projects
9. SSPC-PA 1, Shop, Field and Maintenance Painting
10. SSPC-PA 2, Measurement of Dry Coating Thickness with Magnetic Gauges
11. SSPC-PA, Guide 3 Guide to Safety in Paint Application
12. SSPC-AB1, Mineral and Slag Abrasives
13. SSPC-VIS 1, 02-12 Reference Photographs, Dry Abrasive Blast Cleaning
14. SSPC-VIS 3, 93-04 Visual Standards for Power and Hand-Tool Cleaned Steel

E. NACE International – National Association of Corrosion Engineers International

1. Joint NACE/SSPC-SP5/5 NACE #1 White Metal Blast
2. Joint NACE/SSPC-SP6/NACE #3 Commercial Blast
3. Joint NACE/SSPC-SP7/NACE #4 Brush-off Blast
4. Joint NACE/SSPC-SP10/NACE #2 Near White Metal Blast
5. Joint NACE/SSPC-SP12/NACE #5 Surface Preparation and Cleaning of Metals by Water Jetting Prior to Recoating
6. Joint NACE/SSPC-SP13/NACE #6 Surface Preparation of Concrete

7. NACE RPO178 Appendix C - Degrees of Surface Finishing of Welds

8. NACE RPO287 Field Measurement of Surface Profile

9. NACE SPO188 Discontinuity (Holiday) Testing of Protective Coatings

1.04 SUBMITTALS

A. Comply with Section 01330.

B. Include the following items:

1. Coating manufacturer’s technical data on product and recommended use. Include the brand name and series number of all coatings to be used.

2. Coating manufacturer's surface preparation criteria, including recommended surface profile range after abrasive blasting.

3. Coating manufacturer's application instructions, equipment recommendation, temperature and humidity limitations, pot life and induction requirements, drying and curing times, and recoat cycle times. List recoat times and final cure at 35° F., 45° F., 55° F., 65° F. and 75° F. substrate temperatures. Provide manufacturer’s maximum and minimum material and substrate temperatures for proper application.

4. Contractor’s written program for over spray prevention.

5. Coating manufacturer’s Material Safety Data Sheets (MSDS) for Product to be used on the project, including solvents, additives, cleaners and thinners.

6. Abrasive supplier's certification that the abrasive blast material to be provided complies with the State of California Environmental Protection Agency, Air Resources Board (CARB) and local AQMD requirements for dry outdoor blasting (See Section 2.06 Abrasives for Blast Cleaning)

7. Abrasive blast cleaning and application equipment list and complete procedures for its use.

8. Contractor’s safety program to be employed on this project which complies with the current requirements of CAL/OSHA, OSHA and this Specification.

1.05 QUALITY ASSURANCE

A. Unit Responsibility

1. Assign unit responsibility for the materials, surface preparation, and coatings application to the Coatings Application Subcontractor.

2. Provide a certificate of Unit Responsibility. See Section 01999.

B. Qualifications

1. Coatings Applicator Requirements

a. Hold a valid State of California Contractor's Class C 33 Painting and Decorating Contractors license for performing abrasive blast cleaning and coating work.

b. Minimum of five (5) years practical experience and successful history in the application of similar products on comparable projects. Substantiate this requirement by furnishing a written list of references with the bid package that includes a list of projects with verifiable coating inspection reports.

2. Coatings Applicator Personnel

a. Provide a supervisor at the work site during cleaning and coating operations.

b. Provide skilled personnel qualified to perform work to industry standards of practice and safety, maintain continuity of personnel, and coordinate transfer of personnel with the Construction Manager.

C. Pre-Construction Conference

1. Schedule pre-construction conference with the Construction Manager.

2. Do not proceed without holding a pre-construction conference with the Construction Manager, Contractor, Inspector, Fabricator, Coating Applicator and Manufacturer.

3. Topics for discussion include:

a. Site conditions

b. Coating materials and manufacturer's application recommendations.

c. Surface preparation prior to abrasive blast cleaning.

d. Specification compliance of blast abrasives and surface profile requirements.

e. Schedule of field surface preparation and coating application, and order of the work.

f. List of equipment and procedures for cleaning, blasting, coating application, ventilation and dehumidification (if required).

g. Safety programs and the enforcement to be used during the course of the work.

h. Weather limitations for acceptable work.

i. Inspection facilities and equipment to be provided.

j. Hold points and inspector’s authority.

k. Establish non-conformance procedures, and chain of command and who signs off on completion of bringing the job back into compliance.

l. Procedures for over-spray prevention.

1.06 PRODUCT SHIPMENT, PROTECTION, AND STORAGE

A. Delivery

1. Deliver in original sealed containers identified with labels indicating manufacturer; product name and number; color, batch or lot number; and date of manufacture.

2. Note the date of manufacture and apply coatings prior to the expiration of the guaranteed storage life.

3. Coating materials exceeding storage life will be rejected.

B. Storage

1. Store coating materials in enclosed structures to protect from weather and excessive heat or cold.

2. Coatings stored at above or below manufacturers recommendations will be rejected.

3. Comply with state and local requirements for flammable materials.

1.07 WARRANTY

A. Provide material and workmanship warranty for coatings of 18 months from date of final acceptance by the City

B. Complete the Extended Warranty Form in Section 01999.

C. See also Paragraph 3.17.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. A. Specified products of the following manufacturers have been approved:

1. Tnemec Company Inc.

2. International Protective Coatings (IPC)

3. Dunn-Edwards Paints (D-E)

B. Products of other manufacturers demonstrating equivalence to performance requirements specified in Paragraph 2.02 will be allowed, subject to compliance with Section 01330.

2.02 COATING SYSTEMS

A. General Requirements

1. For all materials of a specified system including primer, touch-up, intermediate, and finish coats, provide products by the same manufacturer. Use thinners, cleaners and other additives as recommended in writing by the coating manufacturer for the specified system.

2. Coating materials, including additives, for interior potable water contact surfaces.

a. Must appear in the current ANSI/NSF Standard 61 "Listing of Certified Drinking Water System Components Health Effects", as published by NSF International (NSF).

b. Comply with regulations and applicable requirements of local, State and federal air quality and health regulatory agencies.

3. Use only coatings which are free of asbestos, lead, cadmium, and chromate.

4. Comply with local AQMD rules and regulations.

5. No request for product substitution will be considered which decreases the dry-film thickness designated, the number of coats to be applied, or which changes the generic type of coating specified.

6. Requests for Substitution

a. Include the full name of each product, descriptive literature, test data, data on past performance, manufacturer's instruction for use, generic type, and its nonvolatile content by volume.

b. Demonstrate product and performance is equivalent to the specified materials and complete systems.

c. Comply with Section 01330.

7. Demonstrate that the coatings manufacturer has local representation which will provide onsite technical support to resolve field problems with the manufacturer's products, materials or application for the duration of the project.

8. Do not purchase or deliver coating materials to the site before the review and written acceptance of the proposed materials by the Construction Manager.

B. Coating Systems for Steel – Severe Service, Exposed or Immersed (Non-Potable).

1. System E-2 High Solids Epoxy – One Prime/Two Finish.

   a. Steel surfaces shall be abrasive blasted in compliance with SSPC-SP 10/NACE No. 2 Near White Metal Blast Cleaning. Obtain an anchor pattern between 1.5 and 2.0 mils. See Paragraph 2.02.C.4 for surface preparation of ductile iron pipe or cast iron surfaces.

   b. Primer: Shop or Field applied two-component polyamidoamine epoxy. Product: Tnemec Series V69F-1211, IPC Interseal 670 or equal applied at 4.0 to 6.0 dry mils.

   c. Intermediate: Field applied two-component polyamidoamine epoxy. Product: Tnemec Series V69F-Color, IPC Interseal 670 or equal applied at 4.0 to 6.0 dry mils.

   d. Stripe Coat: Field-applied, two-component polyamidoamine epoxy. Product: Tnemec Series V69F-Color, IPC Interseal 670 or equal applied, or equal applied at 1.0 to 2.0 dry mils to all welds and sharp edges per SSPC-PA 1, 6.6 Striping, 7.4.6 Application Method (Brush).

   e. Finish: Field applied two-component polyamidoamine epoxy. Product: Tnemec Series V69F-Color, IPC Interseal 670 or equal applied at 4.0 to 6.0 dry mils.

2. System E-3 High Solids Epoxy – One Prime/One Finish.

   a. Steel surfaces shall be abrasive blasted in compliance with SSPC-SP 10/NACE No. 2 Near White Metal Blast Cleaning. Obtain an anchor pattern between 1.5 and 2.0 mils. See Paragraph 2.02.C.4 for surface preparation of ductile iron pipe or cast iron surfaces.

   b. Primer: Shop or Field applied two-component polyamidoamine epoxy. Product: Tnemec Series V69F-1211, IPC Interseal 670 or equal applied at 4.0 to 6.0 dry mils.

   c. Stripe Coat: Field-applied, two-component polyamidoamine epoxy. Product: Tnemec Series V69F-Color, IPC Interseal 670 or equal applied, or equal applied at 1.0 to 2.0 dry mils to all welds and sharp edges per SSPC-PA 1, 6.6 Striping.

   d. Finish: Field applied two-component polyamidoamine epoxy. Product: Tnemec Series V69F-Color, IPC Interseal 670 or equal applied at 4.0 to 6.0 dry mils.

3. System E-4 - 100% Solids Epoxy (High H2S Exposure).

   a. Steel surfaces shall be abrasive blasted in compliance with SSPC-SP 5/NACE No. 1 White Metal Blast Cleaning. Obtain an anchor pattern between 3.0 and 4.0 mils. Do not use this coating for ductile iron pipe or cast iron surfaces.

   b. Stripe Coat: Field-applied, two-component polyamine epoxy. Product: Tnemec Series 435 Perma-Glaze, no known equal, applied at 8.0 to 12.0 dry mils to all welds and sharp edges per SSPC-PA 1, 6.6 Striping, 7.4.6 Application Method (Brush). Stripe Coat shall be followed immediately by Finish Coat application; “wet on wet”.

   c. Finish: Field applied two-component polyamine epoxy. Product: Tnemec Series 435 Perma-Glaze, no known equal applied pinhole free at 30.0 to 40.0 dry mils in one or two coats.

4. Surface Preparation for Ductile Iron Pipe or Cast Iron surfaces

a. Solvent Cleaning

1) Surfaces shall first be inspected and precleaned with appropriate solvents to remove grease, oil and other soluble contaminants.

2) The preferred method of precleaning is through scrubbing of the surface with still bristle brushes soaked in solvent.

3) Prior to evaporation remove solvent by wiping with clean, lint-free cloth rags.

4) Remove rag residue (if any) with dry, oil-free compressed air.

b. Surface Profile

1) Measure surface profile (anchor pattern) in accordance with ASTM D4417, Method C.

2) If surface profile is less than 1.5 mils then proceed with brush-off blast cleaning in accordance with No. 4.c below.

3) If surface profile is 1.5 mils or greater then proceed with hand or power tool cleaning in accordance with No. 4.d.

c. Brush-Off Blast Cleaning

1) Remove all loose annealing oxides, loose rust, dirt and other foreign matter by compressed air nozzle abrasive blast cleaning using a fine abrasive.

2) Remove any dust or other contaminants remaining after blasting with dry, oil-free compressed air or by vacuum cleaning.

3) Recheck surface profile prior to painting.

4) A profile depth of at least 1.5 mils is required.

d. Hand or Power Tool Cleaning

1) Remove all loose annealing oxides, loose rust, dirt and other foreign matter with the use of hand or power tools.

2) Do not use cleaning tools that burnish or smooth the natural roughness (profile) of the cast iron surface.

3) Remove any dust or other contaminants remaining after hand or power tool cleaning with dry, oil-free compressed air or by vacuum cleaning.

C. Coating Systems for Steel-Exterior Exposure.

1. System U-1 Bare Steel - Acrylic Urethane.

a. Steel surfaces shall be abrasive blasted in compliance with SSPC-SP6/NACE No. 3 Commercial Blast Cleaning. See Paragraph 2.02.D.3 for surface preparation of ductile iron pipe.

b. Prime: Shop or Field applied two-component polyamidoamine epoxy. Product: Tnemec Series V69F-1211, IPC Interseal 670 or equal applied at 4.0 to 6.0 dry mils.

c. Intermediate: Field applied two-component polyamidoamine epoxy. Product: Tnemec Series V69F-Color, IPC Interseal 670 or equal applied at 4.0 to 6.0 dry mils.

d. Stripe Coat: Field-applied, two-component polyamidoamine epoxy. Product: Tnemec Series V69F-Color, IPC Interseal 670 or equal applied, or equal applied at 1.0 to 2.0 dry mils to all welds and sharp edges per SSPC-PA 1, 6.6 Striping, 7.4.6 Application Method (Brush).

e. Finish: Field-applied, semi-gloss polyurethane. Product: Tnemec Series 1075-Color Endura-Shield II applied at 3.0 to 5.0 dry mils in one to two coats, IPC Interthane 990 applied at 3.0 to 5.0 dry mils in two or more coats, or equal.

2. System U-2 Overcoat - Acrylic Urethane.

a. Previously painted steel surfaces shall be cleaned in compliance with SSPC-SP 12/NACE No. 5 Surface Preparation of Metals by Water Jetting Prior to Recoating (HP WC) at pressures of 5,000 to 7,000 psi using a zero degree revolving tip.

1) Coatings remaining after being subjected to above shall be uniformly and thoroughly scarified to create a profile using 80 to 100 grit sandpaper.

b. Hot-dipped galvanized components shall be cleaned per SSPC-SP1 Solvent Cleaning followed by SSPC-SP7/NACE No. 4 Brush-Off Blast Cleaning in compliance with ASTM D6386-99(2005) Section 5.4.1, providing a surface profile of 1.5 to 2.0 mils for interior surfaces and a surface profile of 1.0 to 1.5 mils for exterior surfaces.

c. See Paragraph 2.02.D.3 for surface preparation of ductile iron pipe.

d. Spot Prime: Field-applied, two-component epoxy. Product: Tnemec Series 135 Chembuild, IPC Interseal 670 HS or equal at 4.0 to 6.0 dry mils to all bare steel, overlapping adjacent coating by 2 to 4 inches.

e. Full Prime: Field-applied, two-component epoxy. Product: Tnemec Series 135 Chembuild-32GR Light Gray, IPC Interseal 670 HS or equal at 4.0 to 6.0 dry mils.

f. Finish: Field-applied, semi-gloss polyurethane. Product: Tnemec Series 1075-Color Endura-Shield II, IPC Interthane 990 or equal applied at 2.0 to 3.0 dry mils.

3. Surface Preparation for Ductile Iron Pipe

a. Solvent Cleaning

1) Surfaces shall first be inspected and precleaned with appropriate solvents to remove grease, oil and other soluble contaminants.

2) The preferred method of precleaning is through scrubbing of the surface with still bristle brushes soaked in solvent.

3) Prior to evaporation remove solvent by wiping with clean, lint-free cloth rags.

4) Remove rag residue (if any) with dry, oil-free compressed air.

b. Surface Profile

1) Measure surface profile (anchor pattern) in accordance with ASTM D4417, Method C.

2) If surface profile is less than 1.5 mils then proceed with brush-off blast cleaning in accordance with No. 3.c below.

3) If surface profile is 1.5 mils or greater then proceed with hand or power tool cleaning in accordance with No. 3.d.

c. Brush-Off Blast Cleaning

1) Remove all loose annealing oxides, loose rust, dirt and other foreign matter by compressed air nozzle abrasive blast cleaning using a fine abrasive.

2) Remove any dust or other contaminants remaining after blasting with dry, oil-free compressed air or by vacuum cleaning.

3) Recheck surface profile prior to painting.

4) A profile depth of at least 1.5 mils is required.

d. Hand or Power Tool Cleaning

1) Remove all loose annealing oxides, loose rust, dirt and other foreign matter with the use of hand or power tools.

2) Do not use cleaning tools that burnish or smooth the natural roughness (profile) of the cast iron surface.

3) Remove any dust or other contaminants remaining after hand or power tool cleaning with dry, oil-free compressed air or by vacuum cleaning.

D. Coating Systems for New Concrete in Severe Service (High H2S Exposure).

1. System E-5 100% Solids Fiber Reinforced Epoxy.

a. All vertical and overhead concrete surfaces shall be abrasive blasted in compliance with SSPC-SP13/NACE No. 6 Surface Preparation of Concrete, ICRI CSP5. All concrete floor surfaces shall be abrasive blasted in compliance with SSPC-SP13/NACE No. 6 Surface Preparation of Concrete, ICRI CSP3.

b. Surfacer: Field applied three-component epoxy mortar. Product: Tnemec Series 218 MortarClad, or equal applied void-free at 1/16" to all vertical and overhead concrete surfaces. Patch and fill voids on floor as required.

c. Primer (Floor Only): Field applied two-component 100% solids epoxy. Product: Tnemec Series 201 Epoxoprime, or equal applied at 6.0 to 12.0 dry mils.

d. Finish: Field applied two-component fiber reinforced polyamine epoxy. Product: Tnemec Series 436 Perma-Glaze FR, no known equal, applied pinhole free at 60.0 to 70.0 dry mils in one coat to all concrete surfaces.

e. For areas inaccessible by spray, use Tnemec Series 435 Perma Shield (E-4), no known equal, applied pinhole free at 30.0 to 40.0 dry mils in two coats or more to all concrete surfaces.

E. Coating Systems for New Concrete, Interior – Non-Immersion.

1. System E-6 Aliphatic Amine Epoxy for Interior PIP Concrete.

a. All concrete surfaces shall be prepared in compliance with SSPC SP13/NACE No. 6 Surface Preparation of Concrete, ICRI CSP 3.

b. Filler: Field applied three-component epoxy mortar. Product: Tnemec Series 218 MortarClad, or equal. Patch and fill voids as required.

c. Prime: Field applied two-component aliphatic amine epoxy. Product: Tnemec Series 84 Ceramlon ENV, IPC Interseal 670 HS or equal applied at 3.0 to 8.0 dry mils.

d. Finish: Field applied two-component aliphatic amine epoxy. Product: Tnemec Series 84 Ceramlon ENV, IPC Interseal 670 HS or equal applied at 6.0 to 8.0 dry mils.

2. System S-1 Clear Silicate Sealer / Densifyer for Interior Concrete Floors.

a. Surfaces shall be power-wash cleaned per SSPC-SP12/NACE No. 5 (LPWC).

b. Sealer: Field applied one-component clear silicate sealer. Product: Tnemec Series 629 CT Densifyer or equal, applied in one coat by low pressure spray at a spread rate of 300 to 350 square feet per gallon. Do not allow puddles to remain on surface.

F. Coating System for Buried Ferrous Metal

1. System M-1 Petrolatum Based Wrapping Tape

a. Comply with AWWA C-217, as modified by this specification.

b. Clean surfaces per SSPC-SP2 Hand Tool and/or SP3 Power Tool Clean.

c. Prime Paste

1) Field apply as recommended by tape manufacturer.

2) Hand rub or brush all surfaces with priming paste.

3) Liberally apply priming paste to sharp projects such as threads, irregular contours, or badly pitted areas to ensure maximum protection of metal throughout.

d. Treat irregularly shaped surfaces such as nuts, bolts, flanges and valves per one of the following two methods:

1) Apply recommended mastic by hand in sufficient quantity to build an even contour over entire surface. Ensure that all folds and air pockets within the mastic layer are thoroughly pressed out prior to subsequent application of tape.

or

2) Cut and carefully mold an extra layer of tape around all sharp projections, nuts, bolts, etc., before final application of tape to meet specified system thickness.

e. Tape

1) Spirally wrap with a 55% overlap and sufficient tension and pressure to provide continuous adhesion without stretching the tape.

2) Continuously smooth and seal by hand the edges of tape by hand during wrapping.

3) On vertical applications, begin at bottom and proceed upward, creating a weather board overlap.

f. Minimum Finished Thickness

1) Smooth contours: 50 mils.

2) Irregular shaped surfaces: 100 mils.

G. Coating System for Concrete Surfaces in Chemical Storage Areas

1. System E-8 Polyamine Novolac Epoxy for Interior Walls and Floors

a. Applicability: Reinforced concrete floors; exposed surfaces of tank housekeeping pads; interior faces of containment walls including integral column bases, full height; drainage groove and sump; and grout pads.

b. Surface Preparation: Abrasive blast or equivalent all specified surfaces to remove laitance, form release agents, curing compounds, sealers and other contaminants and to provide surface profile in accordance with SSPC SP12/NACE 6, ICRI CSP3-5 and with Tnemec recommendations.

c. Patch & fill: MortarClad Series 218; apply a full parge coat to all specified surfaces at a thickness of 1/32", filling voids up to ¼" deep.

d. First Coat: Tneme-Glaze Series 282-Color; apply 6.0 to 12.0 mils DFT (Horizontal) 4.0 to 8.0 mils DFT (Vertical) to all specified surfaces per Tnemec recommendations.

e. Second Coat: Tneme-Glaze Series 282-Color; apply 6.0 to 12.0 mils DFT (Horizontal) 4.0 to 8.0 mils DFT (Vertical) to all specified surfaces per Tnemec recommendations.

2.03 ABRASIVES FOR BLAST CLEANING

A. Use only new materials that are clean and free of contaminants.

B. Certified by the California Air Resources Board (CARB) for use in dry, open air abrasive blasting.

C. Comply with all applicable requirements of the local Air Quality Management District.

D. Purchase only from firms which can accept spent abrasives, then process spent abrasives for recycle or proper disposal.

2.04 DISINFECTION MATERIALS

A. Comply with AWWA Standards.

PART 3 - EXECUTION

3.01 PROTECTION OF THE WORK

A. Techniques

1. Use coverings or drop cloths to protect floors, concrete, appurtenances, equipment, prepared surfaces and applied coatings or paints.

2. Take precautions to prevent damage or contamination of coated surfaces from personnel entering containment areas or walking near coated surfaces.

3. Exercise care to prevent coating from being spattered onto surfaces that are not to be coated.

4. Recoat surfaces from which such material cannot be removed satisfactorily to produce a finish satisfactory to the Construction Manager.

B. Where protection is required or provided for coated surfaces, maintain protection until the coating film has properly cured.

C. Do not handle, work on or otherwise disturb coated areas until the coating has cured to “dry to handle”.

3.02 SAFETY AND HEALTH REQUIREMENTS

A. General

1. Comply with the applicable health and safety requirements of CAL/OSHA, State of California Construction Safety Orders, and the recommendations of the product manufacturer.

2. Provide and require the use of proper personal protective and life saving equipment for all persons visiting or working in or about the project site.

B. Ventilate work areas to control potential exposure and hazard to workers and employees of the plant.

1. Ventilation System

a. Furnish and install in accordance with these specifications.

b. Modify as directed by the supplier of the equipment, to insure a safe working environment and provide complete removal of all solvent vapors.

c. Equipment: Explosion proof, of industrial design, and of adequate capacity to reduce the concentration of air contaminants to the degree that a hazard to workers or employees of the plant does not exist.

d. Size ventilation system to maintain air changes within the confined space per CAL/OSHA regulations.

2. Remove contaminated air, vapors, and other potential hazardous substances from the confined space.

3. Forced air ventilation during blast cleaning, abrasive removal, coating application, and curing is mandatory in confined spaces.

C. Confine blasting debris and paint over spray to within the bounds of the site.

1. Prevent adverse offsite consequences from the blasting and coating operations.

2. Complaints received by the Construction Manager regarding potential off site problems will be immediately referred to the Contractor for resolution.

a. Immediately halt work and take corrective action required to mitigate such problems.

b. Protect site properties and/or correct damage to property caused by blasting or coating operations at no additional cost to the Owner.

D. Abrasive Blasting

1. Provide and require workers to use approved supplied air protective abrasive blasting hoods.

2. Require workers to wear protective hoods while in the immediate vicinity of the blasting work.

3. During abrasive blasting operations, require the nozzle person(s) to wear U.S. Bureau of Mines approved blasting hoods at all times.

4. Require other personnel in the vicinity of the blasting work, who may be exposed to blasting dust, to wear approved renewable cartridge filter type respirators and plastic safety goggles.

5. Paper dust masks or standard glasses are not acceptable protection.

E. Coating Application

1. When coatings are applied in confined areas, require all personnel directly exposed to coating vapors to wear OSHA approved air supplied hoods.

2. Paper dust masks or standard glasses are not acceptable protection.

3. During the mixing and application of coatings and paints, prohibit all flames, welding and smoking within fifty (50) feet of the work area.

4. Post "No Smoking" signs in appropriate places to warn visitors and workers of the no smoking area.

F. Illumination

1. Provide spark proof artificial lighting for all work in confined spaces.

2. Equip light bulbs with a protective cage to prevent breakage.

3. For lighting fixtures and bulbs, comply with the requirements of Section 70 of the National Fire Protection Association (NFPA), "National Electric Code", for the applicable atmosphere.

4. For lighting and other electrical systems, provide ground fault type, complying with NFPA 70.

5. As directed by the Construction Manager, provide additional illumination: to fully illuminate all areas to be inspected. Level of illumination: As determined by the Construction Manager and as specified.

6. Provide a minimum of 50 foot candles of illumination during all surface preparation and coatings application. Comply with SSPC – Guide 12.

G. Ground all blasting, spray and air hoses to prevent accumulation of static electric charges. Use heavy duty industrial insulated electrical cords with twist lock type connectors.

H. Abrasive Blasting Nozzles

1. Equip with "deadman" emergency shut off switches. Keep switches properly maintained and in working order whenever abrasive blasting is in progress.

2. Wrap all abrasive blast hose connections with duct tape prior to pressurizing.

a. Visually inspect taped connections for leaks at the start and at the conclusion of blast cleaning operations.

b. Immediately repair leaking connections to prevent further damage to the equipment or injury to personnel.

I. Solvents

1. The solvents used with the specified protective coatings are explosive at low concentrations and are highly toxic to humans.

2. Because of toxicity, keep the maximum allowable concentration of vapor below the maximum safe concentration level as defined by CAL/OSHA.

3. In addition, never exceed Lower Explosive Limit in the confined space.

4. Comply with all regulations, manufacturer's recommendations, and directives from the Owner, related to safety of personnel and the handling of the coating materials.

J. Fire Extinguishers

1. Keep a minimum of two (2) ten pound (10lb) ABC type fire extinguishers present in the work area whenever work is proceeding.

2. Train all personnel in the use of this type of fire extinguisher.

K. Noise

1. Whenever the occupational noise exposure exceeds the maximum allowable sound level as set forth by CAL/OSHA regulations or the regional Air Pollution Control District, provide and require the use of approved ear protection devices.

2. General maximum sound levels for the project are defined as those which will not affect routine facility or neighborhood activities.

3. Whenever levels are objectionable, or exceed these limits, adjust operations to reduce noise levels, as directed by the Construction Manager or the local agency of jurisdiction.

L. Ladders, Scaffolding and Rigging

1. Design for their intended use.

2. Comply with all requirements of CAL/OSHA regulations.

3. Erect where requested by the Construction Manager to facilitate inspection and move to the locations requested by the Construction Manager.

4. Equip scaffolding with proper "outriggers", cross bracing, handrails, ladders, and CAL/OSHA approved and tested planking.

M. Follow carefully the manufacturer's recommendations, precautions, and warnings regarding the handling and use of specified cleaning and coating materials.

1. Coating materials may be irritating to the skin and eyes, and may cause an allergic reaction in certain persons.

2. When handling and mixing coatings and paints, require workers to wear proper protective clothing and equipment, including gloves, respirators and eye protection.

3. Identify flammability, toxicity, allergenic properties, and any other characteristic requiring field precautions and follow specific safety practices recommended by manufacturer.

N. Remove spent abrasives and other debris.

1. Comply with requirements of all regulatory agencies for handling and disposing of such wastes.

3.03 CONDITION OF EQUIPMENT

A. Use coating equipment designed for application of the material specified and maintain in good working condition at all times.

1. Equip compressors with suitable traps and filters to remove water, dust and oils from the air.

2. Conduct blotter or white cloth tests in the presence of the Construction Manager at each start-up period or as deemed necessary by the Construction Manager.

3. Verify cleanliness of compressed air supply daily, or as deemed necessary by the Construction Manager.

a. Direct a stream of air, without abrasive, from the blast nozzle onto a white blotter or cloth for twenty (20) seconds.

b. If oil or water appears on the blotter or cloth, blow down all traps and separators until two (2) subsequent twenty (20) second tests show no further oil or water.

c. Use a compressed air system capable of delivering a continuous nozzle pressure to achieve the required surface cleanliness and profile, typically 90 pounds per square inch (psi) minimum to each nozzle in operation.

B. Compressed Supplied Breathing Air

1. For respiratory protection devices, meet Compressed Gas Association, Inc. Specification G-7 for Grade D breathing air.

2. Design and locate breathing air compressors to prevent avoid entry of contaminated air into the air supply system.

3. Equip oil lubricated compressors with an in line air purification system that includes air-purifying absorbent beds and filters that remove water, dust particles, odors, oil, and other hydrocarbons. Also include carbon monoxide sensor and alarm.

4. Provide written certification that the breathing air supplied by the compressors has been tested and the air complies with Specification G-7 Grade D.

3.04 LIMITATIONS ON ABRASIVE BLAST CLEANING

A. Do not blast clean when conditions would not permit the subsequent application of coating.

B. Prepare surfaces to acceptable limits of good painting practice, after completion of surface preparation and before corrosion or recontamination occurs.

C. Surfaces prepared under temperature and humidity control may use an extended recoat window but only after surface preparation re inspection confirms the specified cleanliness.

D. In the event that a cleaned surface colors, oxidizes, or becomes moist, blast clean again and secure inspection/approval from Construction Manager before applying the coating.

3.05 ABRASIVE BLAST CLEANING

A. Use dry method field abrasive blast cleaning for all steel surfaces. Maintain dust emissions below the legal limit and below a level which would create a nuisance.

B. Prior to abrasive blasting, remove all weld splatter by mechanical means. Comply with NACE Weld Designation D, per RP0178-95.

C. Pre-clean per SSPC-SP1 and as approved by Construction Manager prior to abrasive blasting.

1. Clean surfaces until free of dirt, mildew, grinding/welding/cutting debris and visible contaminants.

2. Keep surface clean and dry prior to the abrasive blasting operation.

3. Keep surface temperature 5 degrees above the dew point.

D. After completion of blast cleaning work, sweep, collect, and remove all debris and waste materials from the work area as specified. Keep the area of the work in a clean condition and do not permit blasting particles to accumulate and create a nuisance or hazard.

E. Use the maximum particle size recommended by the manufacturer to produce the specified surface profile, as recommended by the manufacturer, subject to approval of the Construction Manager.

F. Evaluation of surface preparation will be based upon comparison with the latest revisions of the "Visual Standard for Abrasive Blast Cleaned Steel Surfaces", Steel Structures Painting Council (SSPC) VIS 1 02 -12.

G. Perform blast cleaning from rolling scaffolds only within confines of interior perimeter of scaffold.

1. Reaching beyond limits of perimeter will be allowed only if blast nozzle is maintained in a position, which will produce a profile acceptable to the Construction Manager.

2. Proper position for the blast nozzle is a perpendicular angle to the flat surface of the work to be blasted.

H. During abrasive blasting and cleaning operations, do not expose existing and new, previously placed coatings to abrasion from blast cleaning operations.

1. Program and coordinate cleaning and coating operations so that dust, dirt, grit, etc., will not damage or fall upon wet or newly coated surfaces.

2. Restore any damaged coatings to their specified condition.

I. Interior Remedial Work

1. Perform by spot blast cleaning the defective areas.

2. Thoroughly abrade or scarify coating adjacent to the defective area to ensure the repair coating being applied will have satisfactory adhesion to the completely cured existing coating.

3. Upon completion of the repair work, check repaired areas within holiday detector and perform additional repair work as required.

J. Do not distribute spent abrasives on the job site or surrounding properties.

1. Clean, remove from site, and dispose of spent abrasives and other debris.

2. Comply with the requirements of all regulatory agencies for handling and disposing of such wastes.

K. After blast cleaning and prior to application of coating, dry clean surfaces to be coated by dusting, sweeping, and/or vacuuming to remove residue from blasting.

3.06 LIMITATIONS ON THE APPLICATION OF COATINGS

A. Do not apply any coating outside the limits recommended by the manufacturer without written approval by the Construction Manager.

B. Weather Condition Restrictions

1. Do not apply any coating when the surrounding air temperature or the temperature of the surface to be painted is below forty five (45) degrees F or in excess of one hundred and twenty (120) degrees F.

2. Do not apply any coating when the temperature of the material to be applied is less than fifty (50) degrees F or more than one hundred (100) degrees F.

3. Do not apply any coating to wet, moist, or damp surfaces, or during snowy, rainy, foggy, or misty conditions, or when the relative humidity exceeds eighty five (85) percent, or when the ambient air temperature is less than five (5) degrees F above the dew point.

4. Do not apply any coating when it is expected that the relative humidity will exceed eighty five (85) percent or that the ambient air temperature will drop below forty five (45) degrees F within eight (8) hours after the application of the coating.

5. Do not apply any coating when the surface temperature is expected to drop to less than 5 degrees F above the dew point within eight hours after application of coating.

6. Do not apply any coating when wind speed exceeds fifteen (15) miles per hour in the immediate coating area.

C. The Construction Manager may require the Contractor to roll the coatings if high winds create the potential for damage to surrounding property by airborne paint particles. This does not reduce the Contractor’s responsibility for any damage to property caused by blast cleaning or painting operations.

1. If above conditions are prevalent, delay or postpone the coating application work until conditions are favorable.

2. Anticipate dew or moisture condensation and if such conditions are prevalent, delay coating work until midmorning to be certain that the surfaces are dry.

3. Complete each day's coating work in time to permit the film sufficient drying time, per manufacturer’s recommendations, and prior to subjecting coatings to potentially damaging climatic conditions.

D. The Construction Manager may utilize psychrometers and other measuring gauges at the work site to monitor climatic conditions. Repair coatings damaged by a change in climatic conditions. As directed by the Construction Manager, restore coating to specified requirements at no cost to the Owner.

3.07 PROCEDURES FOR THE APPLICATION OF COATINGS

A. Contact the Construction Manager to schedule inspection and approval of prepared surfaces prior to each application of coating materials.

1. The Construction Manager may order the removal of any coatings applied by the Contractor prior to inspection and approval.

2. If so ordered by the Construction Manager, remove coatings, prepare surfaces, schedule inspection, obtain approval, and reapply coating. Perform work at no additional cost to the Owner.

B. After blast cleaning and prior to application of coatings and paintings, clean the surfaces to be coated by air blowing with clean dry air, dusting, sweeping, or vacuuming to remove any residue from blasting as directed by the Owner.

C. Remove and reapply any coating applied to an improperly prepared surface. Perform this work to the satisfaction of the Construction Manager and at no additional cost to the Owner.

D. Follow the recommendations of the coating material manufacturer including the selection of application equipment, thinners, mixing, drying time, temperature and humidity of application, and safety precautions. Address any conflicts between coating manufacturer's recommendations and requirements in this specification at the Pre-Construction Conference meeting and resolve at that time.

E. Properly cure and clean any surface which will receive subsequent coating layers. Remove over spray from previous coats, dirt or dust accumulation, or scuff marks from worker traffic.

F. Comply with SSPC PA 1 for all coating and painting application work.

G. Stir and strain as required, and keep coating materials at a uniform consistency during application.

H. Use a different shade or tint (or as selected by Construction Manager) on succeeding coating or painting applications to indicate coverage.

1. Apply each coating evenly, free of sags, runs, and other evidence of poor workmanship.

2. Produce finished surfaces free from holidays, defects, or blemishes.

I. Difficult Surfaces

1. Includes all interior steel surfaces, all welds, sharp edges, nuts, bolts irregular surfaces.

2. Other difficult surfaces include, but are not limited to, welds, roof lap seams, nuts, bolts, ends and flanges of rafters, or other irregular shapes.

3. To insure complete coverage, brush coat the specified material per SSPC-PA 1, 6.6 Striping, 7.4.6 Application Method (Brush).

4. Brush coating in multiple directions to insure penetration and coverage.

J. Thinners

1. Do not use thinners unless recommended by the coating manufacturer.

2. If thinning is allowed, do not exceed the maximum allowable amount of thinner per gallon of coating material.

3. Do not reduce coating materials more than is absolutely necessary to obtain the proper application characteristics.

4. Materials thinned to achieve proper application characteristics must still meet the specified minimum dry film thickness.

5. Do not use any coatings which have been so severely modified or thinned that their application would cause established VOC limits to be exceeded. Contractor is responsible for any fines, costs, required remedies, or legal action and costs which may result from exceeding VOC limits.

K. Spraying

1. Hold the spray nozzle perpendicular and sufficiently close to surfaces being coated to avoid excessive evaporation of volatile constituent and loss of material into the air or the bridging of cracks and crevices.

2. Use a spray technique that will result in a film free of fog, spatter or over spray.

3. Reaching beyond limits of scaffold perimeter will not be permitted.

4. Remove all over spray as directed by the Construction Manager.

5. Approval of Contractor's over spray prevention procedures and Construction Manager's presence on project site does not free Contractor from responsibility for over spray.

6. Obtain Construction Manager's approval of procedures will be required prior to start of spray operations.

L. Drying Time

1. Strictly observe manufacturer's printed instructions for drying time between coats and time between applications of coats.

2. If the recommended minimum or maximum recoat time is violated, prepare the surface as directed by the coating manufacturer.

M. Dry Film Thickness

1. Apply coating systems within the specified minimum/maximum range dry-film thickness as measured from above the peaks of the surface profile.

2. Measure per SSPC-PA 2 and correct for the magnetic effect of the surface profile.

N. Cleaning Cast Iron

1. Clean per SSPC-SP1 by thorough scrubbing with stiff bristle brushes soaked in solvent.

2. Brush-off blast cleaning may be necessary in order to provide a minimum surface profile of 1.5 mils.

3. Once a 1.5 mil profile (or greater) is verified, hand or power tool clean (reference SSPC-SP2/SP3) but do not use cleaning tools that burnish or smooth the natural roughness (profile) of the cast iron surface.

4. Remove any dust or other contaminants remaining after hand or power tool cleaning with dry, oil free compressed air or by vacuum cleaning.

5. It is not the intent to remove the annealing.

6. If the cast iron has bituminous coating, trace amounts may remain in the pours of the cast iron.

O. Do not break down kits. Do not mix partial kits.

P. Produce coating termination and transition details per manufacturer's recommendations.

3.08 FIELD QUALITY CONTROL

A. Inspection

1. All materials and work are subject to inspection by the Construction Manager. Unless otherwise noted herein, the Owner will pay the cost of 3rd party inspection.

2. The Construction Manager may perform inspection on all phases of the surface preparation, abrasive blast cleaning, and application of the coating and painting systems.

3. Provide all inspection equipment including that which may be operated by the Construction Manager. The Construction Manager may elect to use his own equipment.

4. Use quality assurance procedures and practices to monitor all phases of surface preparation, application and inspection throughout the duration of the project. Procedures or practices not specified may be utilized if they meet appropriate professional standards and are approved by the Construction Manager.

5. Comply strictly to specified quality of materials, workmanship, and diligent execution of the contract. Contractor's use of a consultant to inspect the work does not reduce or alter Contractor's responsibility for the quality control, and quality assurance, or other requirements of the contract.

6. Work performed in the absence of the Construction Manger's inspection is at the risk of the Contractor.

   a. After written notice from the Construction Manager, the Contractor may be required to remove and replace the uninspected work.

   b. The entire cost of removal and replacement of uninspected work, including the cost of any materials furnished by the Owner and used in the work thus removed, is the responsibility of the Contractor, regardless of whether or not the work removed is found to be defective.

7. Provide, as a minimum, 200 foot candles of illumination for all inspection. Comply with SSPC – Guide 12.

3.09 FINISH SCHEDULE

A. Specific coating systems, colors and finishes for rooms, galleries, piping, equipment, and other items which are painted or have other finishes are specified in the following coating systems schedule. After approval of coatings, submit draw downs of all the specified colors to the Construction Manager for final color approval using the appropriate finish coating.

B. Unless otherwise specified in the coating system schedule, the word "interior" means the inside of a building or structure and the word "exterior" means outside exposure to weather elements.

C. If surfaces are not specified in the LOCATION SPECIFIC FINISH SCHEDULE, finish according to the following GENERAL FINISH SCHEDULE:

3.10 GENERAL FINISH SCHEDULE

SURFACE	SYSTEM	COLOR
A. Equipment and Metal Appurtenances		
1. Equipment, equipment supports, mounting stands, utility stations, non-immersed, non-stainless, non-ferrous metals, unless otherwise specified.	—	—
a. Interior	U-1	Match adjacent piping
b. Exterior	U-1	See Note 1

SURFACE			SYSTEM	COLOR
2.	Equipment, immersed or high spray, unless otherwise specified.		—	—
	a.	Potable (NSF)	E-1	See Note 1
	b.	Non-potable	UI-5	See Note 1
3.	Existing equipment not damaged or modified by work in this contract		Uncoated	—
4.	Existing equipment damaged or modified by work in this contract		—	—
	a.	Interior	E-3	Match existing
	b.	Exterior	U-1	Match existing
5.	Electrical switchgear panels, unit substations, motor control centers, power transformers, distribution centers and relay panels; interior and exterior		See Division 16	See Division 16
6.	Instrumentation panels, graphic indicating panels, indicating and transmitting field panels, unless stainless steel; interior or exterior		See Division 16	See Division 16
7.	Existing electrical and instrumentation panels not damaged by work in this contract		Uncoated	—
8.	Existing electrical and instrumentation panels damaged by work in this contract		—	—
	a.	Interior	E-3	Match Existing
	b.	Exterior	U-1	Match Existing
B.	Process Piping			
1.	Submerged iron or steel piping, appurtenant hangers and supports, including galvanized (except stainless steel and non-ferrous)		E-2	Match Existing
2.	Ferrous, non-ferrous and galvanized piping, appurtenant hangers and supports, non-immersed, non-stainless steel		—	—
	a.	Interior	E-3	See Note 1
	b.	Exterior	U-1	See Note 1
3.	Plastic PVC and CPVC Piping		—	—
	a.	Interior	E-3	See Note 1
	b.	Exterior	U-2	See Note 1
4.	Flexible Tubing		Uncoated	—
C.	Miscellaneous Electrical			
1.	Conduit, outlet and junction boxes, lighting transformers, lighting communication and small power panels, control stations, appurtenant hangers, trays, clamps and supports; interior and exterior		See Division 16	See Division 16

SURFACE	SYSTEM	COLOR
2. Existing conduit, outlet and junction boxes, lighting transformers, lighting, communication and small power panels, control stations, lagged ductwork, appurtenant hangers, clamps and supports on uncoated surfaces, unless otherwise specified	—	—
a. Not damaged or modified by work in this contract	Uncoated	—
b. Damaged or modified by work in this contract	—	—
1) Interior	E-3	See Note 1
2) Exterior	U-2	See Note 1
D. Ductwork (Except as specified)	Uncoated	—
E. Concrete, Grout, Masonry, and Plaster		
1. Structural concrete, exposed	Uncoated	—
2. Structural concrete, buried, immersed, non-corrosive environment, unless otherwise specified	Uncoated	—
3. Concrete equipment pads	E-6	See Note 1
4. Concrete Floors	S-1	See Note 1
F. Existing Doors, Door Frames and Louvers damaged by work in this contract; interior and exterior	U-2	See Note 1
1. FRP	Uncoated	—
G. Existing Handrails, Gratings, Floor Plates, Manhole Covers, and Hatches		
1. Not damaged by work in this contract	Uncoated	—
2. Damaged by work in this contract	—	—
a. Interior	E-3	See Note 1
b. Exterior (non-walking surfaces)	U-2	See Note 1
H. Aluminum Flashing, Light Standards, and Supports; interior and exterior	Uncoated	—
I. Other		
1. Equipment and appurtenances which are made of fiberglass, plastic, rubber, including flexible hose, conduit, and plastic coated tubing, expect as specified	Uncoated	—
2. Buried, sleeve-type couplings, flanged pipe, couplings, valves, mechanical and electrical penetrations not encased in concrete, except as specified	M-1	See Note 1
J. Aluminum surfaces in contact with concrete.	E-2	See Note 1
Notes: 1. Owner to select from manufacturer's color charts		

3.11 LOCATION SPECIFIC FINISH SCHEDULE

SURFACE			SYSTEM	COLOR
A.	New Dewatering and Thickening Mechanical Facility (See Drawing Series M000)			
	1.	Concrete floor seal	S-1	clear
	2.	Stainless steel items and exposed anodized aluminum	Uncoated	—
	3.	Aluminum surfaces in direct contact with concrete	E-2	—
	4.	Structural steel columns, beams, and base plates	U-1	See Note 1
	5.	Metal roof panels, metal wall panels, roll-up door	FF	See Notes 2
	6.	Screw press dewatering system items which are not stainless steel (ferrous metal)	U-2	—
	7.	Stainless steel conveyor	Uncoated	—
	8.	Polymer blending unit and air compressor	FF	—
	9.	Screw press and conveyor drive motors and gear reducers	U-2	See Note 1
	10.	Exposed piping, fittings, and valves	U-1	See Note 1
	11.	Flocculation tank or chamber exposed exterior surfaces which are not stainless steel (ferrous metal)	U-1	See Note 1
	12.	Concrete floor and walls beneath trench drain and polymer spill containment grating	E-8	—
	13.	Emergency shower	FF	See Note 2
	14.	Metal doors and frames	See Note 4	See Note1
B.	Covered Equipment Storage (See Drawing Series S1300)			
	1.	Concrete floor seal	S-1	Clear
	2.	Structural steel columns, roof beams, purlins, girts, etc	U-1	See Note 1
	3.	Architectural trim	See Note 4	See Note1
	4.	Building Roof Panels	FF	See Notes 1, 2
	5.	Preformed metal wall panels	FF	See Notes 1, 2

Notes:
1. Owner to select colors from manufacturer’s color charts
2. FF = Factory Finish.

3.12 EXCLUSIONS

A. Do not prepare or coat the following items or surfaces:

1. Mortar coated pipe and fittings
2. Sacrificial anodes and support wires

3. Copper, brass

4. Name Plates

5. Fiberglass items

6. Piping insulation, insulation covers, or insulation jackets.

B. Where surfaces specified as "not to be coated" are damaged, coated or otherwise do not comply with these Specifications, clean, repair or otherwise restore such surfaces to the satisfaction of the Construction Manager, at no additional cost to the Owner.

3.13 VENTILATION

A. General Requirements

1. Use forced air ventilation at all times to effectively remove solvents for proper drying of coats on the interior containment structures.

2. Remove solvent vapors released during application and from the deposited film using explosion proof exhaust blowers, suction fans, or as an integral part of the dehumidification equipment.

3. Duct exhaust blowers or suction fans should be ducted to or from the bottom of the structure.

B. Requirements for Potable Water Structures (Not Used)

3.14 FINAL CURE (INTERIOR LININGS)

A. Follow manufacturer’s recommendations, as approved by the Construction Manager.

1. Minimum Cure Time: Seven (7) days (168 hours) at a temperature of 70 degrees F at a relative humidity of 50%.

2. Do not provide less than minimum cure time, unless recommended in writing by the manufacturer and approved by the Construction Manager.

B. After completion of curing cycle, test the applied coating via a “solvent” or “hardness test”.

1. Verify to the Construction Manager that adequate curing has been achieved.

2. Perform “solvent” tests or “hardness” tests, including the solvent and number of double-rubs, recommended by coating manufacturer.

C. Solvent Wipe Test

1. Verify completion of the final cure.

2. Use a rubbing a cloth saturated with solvent as recommended by manufacturer on the area to be tested.

3. If the area tested becomes tacky, the coating is not fully cured.

a. Extend the curing period until the coating is fully cured to the satisfaction of the Construction Manager.

b. Test per ASTM D5402.

D. If final cure has not been attained, based on tests described above, extend the curing time until applied coating passes the “double rub solvent test” per manufacturer’s instructions.

3.15 INSPECTION AND TESTING

A. Perform inspection and testing as specified. Include additional inspection, sampling and testing work that the Construction Manager may require to verify compliance with these Specifications.

B. Notify the Construction Manager three (3) working days in advance of any field operations involving abrasive blast cleaning or coating applications.

C. Assistance to Construction Manager

1. Coordinate work with the inspection, sampling and testing requirements of the Construction Manager

2. Assist the Construction Manager as required for the performance of duties.

3. Provide all lighting and scaffolding to enable the Construction Manager to perform inspection and testing.

4. Provide the level of illumination and scaffolding locations for inspection purposes as directed by the Construction Manager.

5. Furnish Construction Manager with safety equipment and devices during abrasive blast cleaning, coating and painting operations. Provide a helmet with continuous fresh air supply for observation during cleaning operations and coating application.

D. The Construction Manager will perform such tests as are required to help ensure compliance with all phases of the surface preparation, and application of the coating systems. Provide test equipment including, but not be limited to the following: SSPC surface preparation standards; surface profile test tape; micrometer; abrasive sieve test; ultraviolet lamp; sling psychrometer; mirror; certified thickness calibration plates; magnetic type dry film thickness gage; and a nondestructive holiday detector.

E. Inspection by the Construction Manager does not relieve the Contractor of the responsibility of compliance with all the requirements of these specifications.

1. In cases of dispute concerning surface profiles, film thickness, film continuity (holidays), etc., the Construction Manager's measurements and tests shall be final. Abide by the Construction Manager's decisions and directives.

2. Correct deficiencies in the continuity of the coating, or painting film or in the dry film thickness by applying additional coats as required, at the sole expense of the Contractor.

F. The Construction Manager will determine the degree and surface profile of the field blast cleaned surface per test method NACE RP0287. Perform additional blast cleaning over areas not conforming to the specified degree of surface preparation and surface profile.

G. Perform tests on surfaces of abrasively blast-cleaned steel to detect oil and other contaminants which might be deposited on surfaces as a result of abrasive blasting operations. This may include chemical tests or ultraviolet (black light) tests, as required.

H. Perform all mixing, thinning, application and holiday detection of coatings in the presence of the Construction Manager.

I. The Construction Manager may completely inspect each application of coating to determine thickness and integrity.

1. Each coating application will be checked and deficiencies marked.

2. After observing specified recoat time apply additional coating materials over areas not having the specified minimum dry film thickness and areas having any holidays or pinholes.

3. After correction of deficiencies, the Construction Manager will re inspect those areas to determine the acceptability of the additional coating.

4. Each coating application must be one hundred (100) percent to the satisfaction of the Construction Manager prior to proceeding with successive coating applications.

J. Dry Film Thickness Measurement

1. Use an approved magnetic type non-destructive dry film thickness gauge.
2. Determine that the specified dry film thickness has been obtained.
3. Measure specified dry film thickness' above the peaks of the surface profile.
4. Perform as many dry film thickness measurements, as described in SSPC – PA2, as required to verify compliance with this specification. Use a Type II Constant Pressure Probe Dry Film Thickness Gauge.

K. Furnish calibrated inspection devices in good working condition for detection of holidays and measurement of dry film thickness.

1. Calibrate and operated per manufacturer's instructions.
2. Furnish U.S. Department of Commerce; National Bureau of Standards certified thickness calibrated plates to test the accuracy of dry film thickness gauges and certified instrumentation to test the accuracy of holiday detectors.
3. Keep dry film thickness gauges and holiday detectors available onsite at all times until final acceptance of the application.

L. Construction Manager may elect to furnish inspection devices and render decisions based solely upon test results from these devices.

M. For coating film continuity detection tests on interior structure coated surfaces with 20 mils or less dry film thickness, use a non destructive holiday detector.

1. Provide personnel to operate coating film continuity detection devices under the direction of the Construction Manager.
2. Operate inspection devices per the manufacture’s recommendations in accordance with NACE RPO188.

N. Test the coating integrity of the interior surfaces below the overflow line.

1. Mark all pinholes and repair manufacturer's written recommendations, or as directed by the Construction Manager; and then retest.
2. Holidays or other irregularities are not permitted in the completed coating system.
3. During the testing, keep the detecting blade in continuous contact with the coated surface.
4. Do not proceed with holiday detection until the completed coating system has been cured per the manufacturer's recommendations.

O. Upon completion of the epoxy application to the interior structure surfaces, retest for holidays those areas of the lower shell which may have been subjected to abrasive blast rebound from the floor, repaired as noted herein. Repair areas as required and retest.

P. Dew Point

1. Measure using a sling psychrometer in conjunction with U.S. Department of Commerce Weather Bureau Psychrometric Tables, a digital sling psychrometer thermo hygrometer, or equivalent.
2. Comply with specified temperature and dew point for all surface preparation and coating operations.

Q. Measure anchor profile for prepared surfaces using a non-destructive instrument such as a Testex Press O Film System.

R. The Construction Manager will verify completion of the final cure of the interior lining using a solvent wipe test.

1. Solvent wipe test: Consists of rubbing a solvent saturated rag on the area to be tested per ASTM D5402, using solvent recommended by manufacturer.

2. If any coating material is removed or the surface being tested becomes tacky, the coating is not fully cured. Extend curing time and if required continue dehumidification until the coating is fully cured.

S. The Construction Manager may suspend the work if the cleaning and coating operations of the Contractor are creating a localized condition detrimental to facility operation, personnel or adjacent property. In the event of an intermittent or emergency suspension of the work by the Construction Manager, correct deficiencies immediately.

T. Prepare, sign, and submit to the Construction Manager daily inspection reports.

U. Nonconformance Reports

1. When a nonconformance report is required, prepare, sign, and submit to the Construction Manager within one working day from the time that it is written.

2. After confirming that all non-conforming work has been corrected and/or the coating work is in compliance with this specification, prepare and submit a conformance verification report shall be completed for the specific item or area.

3. This report must be signed by the inspector.

3.16 FINAL CLEANUP

A. Leave all areas in a neat and presentable condition.

B. Remove rubbish, construction debris and waste, surplus construction materials, scaffolding, tools, equipment, and coating, and thinner containers, and excess coating, and thinners, and other objectionable materials.

C. Dispose of such materials away from the site of work and in conformance with all applicable codes, ordinances and regulations.

D. Remove coating spots upon adjacent surfaces.

E. Clean, repair or refinish all damage to surfaces resulting from the work.

3.17 WARRANTY INSPECTION

A. Warranty: See Paragraph 1.08.

B. Conduct a warranty inspection of all coating and painting work between the period of eleventh (11th) month through eighteenth (18th) month following final acceptance of the Contract work.

C. The Construction Manager will establish the date for the inspection and will notify the Contractor at least 30 days in advance. The Construction Manager may, by written notice to the Contractor, reschedule the warranty inspection to another date within the eleventh through eighteenth month inspection period, or may cancel the warranty period altogether.

D. Attendance

1. Attend the warranty inspection.

2. Notifying all directly involved parties of the date and time of the inspection.

3. The Construction Manager suggests all personnel present at the pre-construction conference be present at this inspection.

E. Preparation

1. The Owner will completely drain each vessel and hose clean the interior sufficiently for inspection.

2. Provide (Contractor) suitable lighting, ventilation and scaffolding for the structure inspection.

3. Use SSPC – Guide 12 for Illumination, and provide a minimum of 200 candle foot illumination for inspection.

F. Inspect visually the entire interior and exterior coating systems to determine whether any repair work is necessary or if a more detailed inspection will be needed.

G. The Construction Manager will prepare and deliver to the Contractor an Inspection Report:

1. The report will cover the warranty inspection, setting forth the number and types of failures observed, the percentage of the surface area where failure has occurred, and the names of the persons making the inspections.

2. Color photographs illustrating each type of failure will be included in the report.

3. A coating system failure is defined as any location where coatings have peeled off, bubbled, or cracked, and any location where rusting is evident.

4. Upon completion of inspection and receipt of Inspection Report, the Construction Manager will establish a date for the Contractor to proceed with remedial work.

H. Commence repairs on the date established by the Construction Manager and completed within one month (thirty days).

1. Repair all coating system failures.

a. Remove the deteriorated coating, clean the surface and recoat with the same coating system in strict accordance with the specification and manufacturer's recommendations, to the satisfaction of the Construction Manager.

b. If the area of failure exceeds twenty five (25) percent of the area of a portion of the structures surface, then remove the entire coating system and recoat that surface

I. All costs for warranty inspection are the responsibility of the Contractor, exclusive of the costs of the coatings inspection firm retained by the Owner for the warranty inspection. All costs for repair of defective work discovered during the warranty inspection, and the additional cost for re-inspection of repaired work by the coatings inspection firm, are the responsibility of the Contractor. .

J. If the contractor fails to complete the remedial work to the satisfaction of the Construction Manager, the Owner may elect to perform the remedial work. The Contractor is liable for actual cost of all such remedial work, plus 20% for Owner’s administrative cost.

K. Perform final cleanup in accordance with this Section.

END OF SECTION

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SECTION 09970

MECHANICAL ZINC COATING

PART 1 - GENERAL

1.01 DESCRIPTION

A. Mechanically applied zinc coating for steel fasteners including bolts, screws, nuts and washers. Electroplated corrosion protection is not an acceptable substitute for mechanical zinc coating.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 01330 – Submittal Procedures
2. Section 09972 – Hot-Dip Zinc Coating

1.03 SUBMITTALS

A. Submit product data that describes materials and method of coating used in accordance with Section 01330.

1.04 REFERENCES

Reference	Title
ASTM A153	Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM B695	Coatings of Zinc Mechanically Deposited on Iron and Steel

PART 2 - PRODUCTS

2.01 MATERIALS

A. Zinc coating material: As specified in ASTM A153.

B. Zinc coating thickness: Class 50 as specified in ASTM B695.

PART 3 - EXECUTION

3.01 FIELD REPAIR

A. Repair damaged surfaces of zinc-coated metals as specified in Section 09972.

END OF SECTION

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SECTION 09972

HOT-DIP ZINC COATING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Application of zinc coating to steel using the hot-dip method.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 01330 – Submittals
2. Section 09970 – Mechanical Zinc Coating

1.03 SUBMITTALS

A. Comply with Section 01330.

B. Manufacturer's product data showing conformance to the specified product.

C. Narrative description of method for application of zinc coating.

D. Coating applicator's Certificate of Compliance that the hot-dip galvanized coating meets or exceeds the specified requirements of ASTM A123 or A153, as applicable.

E. Source quality control procedures.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Zinc Coating Material: In accordance with ASTM A153.

B. Zinc Dust-Zinc Oxide Coating: Conform to MILSPEC DOD-P-21035. Manufactured by Z.R.C. Chemical Products Co., Galvicon Co., or equal.

2.02 FABRICATION REQUIREMENTS

A. Fabrication practices for products to be galvanized: In accordance with applicable portions of ASTM A143, A384 and A385.

PART 3 - EXECUTION

3.01 APPLICATION

A. Galvanize steel members, fabrications and assemblies after fabrication and in accordance with ASTM A123.

B. Unless otherwise specified, steel items weighing 100 pounds or less shall be hot-dip zinc coated.

C. Galvanized Bolts and Nuts:

1. Bolts and nuts 5/8-inch in diameter and larger: hot-dip zinc coated in accordance with ASTM A153.
2. Bolts and nuts smaller than 5/8-inch and all other bolts, screws, nuts, washers and other minor steel fasteners: Mechanically zinc coated as specified in Section 09970.

3.02 COATING REQUIREMENTS

A. Coating Thickness: Coating Grade 35 in accordance with ASTM A123, Table 2.

3.03 REPAIR OF DEFECTIVE GALVANIZED COATING

A. Damaged Zinc Coating:

1. Clean substrate surface, then repaired with zinc dust-zinc oxide coating in accordance with ASTM A780. Apply in accordance with instructions published by the manufacturer of the zinc dust-zinc oxide coating.

2. Coating Thickness: Apply multiple coats to achieve a dry film thickness of 8 mils.

B. Items not physically damaged, but which have insufficient or deteriorating zinc coatings, and items damaged in shipment or prior to installation, shall be removed from the project site for repair by the hot-dip zinc coating method.

END OF SECTION

SECTION 10020

WARNING SIGNS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Informational and accident prevention signs.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 01330 – Submittals
2. Section 11000 – General Requirements for Equipment

1.03 DESIGN REQUIREMENTS

A. Regulatory Compliance

1. Accident Prevention Signs: Conform to design required by OSHA Section 1910.145 of Subpart J, Part 1910, Chapter XVII, Title 29 of the Code of Federal Regulations.
2. Exit Signs: Conform with Section 1910.37(g) of the OSHA Safety and Health Standard for General Industry, Article 10, Section 10.113 of the Uniform Fire Code, and where applicable with local fire regulations.

B. Size Requirements

1. Sign sizes shall be as follows:
   a. Size A: 14” x 20”
   b. Size B: 10” x 14”
   c. Size C: 7” x 10”
   d. Size D: 24” x 24”

C. Color Requirements

1. Danger Signs:
   a. Background: White.
   b. Heading: White lettering in a red oval with a white border around the oval. Position oval in a black rectangular field in the upper portion of the sign.
   c. Message: Black lettering.
2. Caution Signs:
   a. Background: Yellow.
   b. Heading: Yellow lettering in a black rectangle. Position black rectangle in the upper portion of the sign.
   c. Message: Black lettering on the yellow background.
3. Safety Signs:
   a. Background: White.
   b. Heading: White lettering in a green rectangle. Position green rectangle in the upper portion of the sign.
   c. Message: Black lettering on the white background.

4. Warning Signs:

a. Background: Orange.

b. Heading: Black lettering in an orange diamond with black border forming the diamond. Position orange diamond in the upper portion of the sign.

c. Message: Black lettering.

1.04 SIGN TYPES

A. Sign Types and Messages

Type	Message
DANGER SIGNS	
I	DANGER—HIGH VOLTAGE
II	DANGER—480 VOLTS
III	DANGER—CONFINED SPACE ENTRY
IV	DANGER—CONFINED SPACE—HAZARDOUS ATMOSPHERE
CAUTION SIGNS	
V	NON-POTABLE WATER—DO NOT DRINK
VI	CAUTION—CORROSIVE CHEMICALS
VII	CAUTION—HIGH TEMPERATURE
SAFETY SIGNS	
VIII	EAR PROTECTION REQUIRED BEYOND THIS POINT
IX	EMERGENCY EYEWASH AND SAFETY SHOWER
X	EMERGENCY EYE WASH
XI	NOT AN EXIT
WARNING SIGNS	
XII	WARNING—AUTOMATIC EQUIPMENT MAY START AT ANY TIME
XIII	WARNING—FOREIGN VOLTAGE
XIV	(NFPA hazardous material sign with appropriate chemical ratings)

1.05 SUBMITTALS

A. Comply with Section 01330.

B. Samples: Submit 2 sets, typical of sign type. One set of samples will be retained by the CM, other returned to Contractor.

C. Color samples of each color, 150 mm x 150 mm (6”x 6”). Show anticipated range of color and texture.

D. Sample of typeface, arrow, and symbols in a typical full size layout.

E. Manufacturer’s Literature: Manufacturer’s printed specifications, anchorage details, installation and maintenance instructions.

PART 2 - PRODUCTS

2.01 GENERAL

A. Sign Lettering: Single stroke and contrasting in color with the background.

B. Use standard and commonly accepted international symbols on signs with messages that include such symbols.

C. Chain Mounted Signs: Provide signs with lettering on both sides.

2.02 MATERIALS

A. Signs shall be 0.100” thick fiberglass with embedded fade-proof legends.

2.03 SIGN SCHEDULE

A. Provide signs in accordance with the following schedule:

Location	Size	Type	Mount
Hose Bibs	B	V	48” above floor
Automatic Equipment	B	XI	See also Section 11000
Electrical Equipment	B	II	48” above floor

PART 3 - EXECUTION

3.01 INSTALLATION

A. Mount signs using round head stainless steel bolts or screws.

B. Securely mount signs level, plumb and true to plane positions.

END OF SECTION

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SECTION 10520

FIRE EXTINGUISHERS AND CABINETS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Multi-purpose dry chemical fire extinguishers.

B. Fire extinguisher cabinets.

C. Mounting brackets.

D. Equipment List

Structures	Location	Mount	Quantity	UL Rating	Capacity, pounds
Dewatering Building	Owner Chosen	Wall	One	B	10
DAFT Building	Owner Chosen	Wall	One	B	10

1.02 REFERENCED SECTIONS

A. The following Section is referenced in this Section

1. Section 01330 – Submittals
2. Section 01999 – Reference Forms

1.03 DESIGN CRITERIA

A. Comply with applicable standards:

1. National Fire Protection Association (NFPA) 10
2. Underwriters Laboratories (UL) 299

B. Comply with applicable code:

1. California Code of Regulations Title 8, Section 6151

C. Meet the requirements of the City of Galt Fire Marshal.

1.04 SUBMITTALS

A. Comply with section 01330.

B. Manufacturer's catalog information ("cut sheets") for extinguishers, mounting brackets and cabinets. Demonstrate compliance with specified UL rating and NFPA standard.

C. Material Safety Data Sheets for chemical supplied.

D. Provide written instructions describing operation, charging, and maintenance of fire extinguishers furnished.

1.05 QUALITY ASSURANCE

A. Extinguishers shall:

1. Be listed in the current edition of the U.L. Fire Protection Equipment Directory
2. Be supplied by a single manufacturer.

3. Bear Factory Mutual Certification and Underwriters Laboratories Certification, and be listed by the state fire marshal.

1.06 WARRANTY

A. All fire extinguishers shall be warranted against defects in materials and workmanship for 6 years from date of final project acceptance.

B. Complete the Extended Warranty Form in Section 01999.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Larsen Manufacturing MP-10

B. Amerex

C. Approved equivalent

2.02 EXTINGUISHERS

A. Type: Multipurpose dry chemical (Class A, B, C)

B. Tamper seals: Breakable metal type.

C. Pressure gauges: Dial type.

D. Mounting brackets:

1. As furnished by the manufacturer, for the equipment specified.

2. Quick-release design, not subject to release by bumping.

E. Bracket anchors: Furnished with each bracket, suitable for specified mounting surface.

2.03 FIRE EXTINGUISHER CABINETS

A. Larsen Architectural Series, or equal.

1. Doors and frames: 0.062-inch extruded aluminum, etched to a satin finish and anodized to prevent corrosion.

2. Doors:

a. Tubular construction with an aluminum continuous hinge and a positive cam catch.

b. Door lite: Full wire glass

B. Provide where indicated:

1. Recessed.

2. Semi-Recessed.

3. Surface mounted.

C. Fire Rated Cabinets: Provide for rated walls.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Codes:

1. Conform to NFPA 10.
2. Conform to CCR Title 8, Section 6151
3. Conform to ADA requirements for mounting height

B. Place the indicated number and type of fire extinguishers, freshly charged, in cabinets or on mounting brackets as specified, just prior to completion of the project.

C. Prepare recesses in walls for cabinets as required by type and size of cabinet and style of trim, and in compliance with manufacturer's instructions.

D. Bracket mounts:

1. Location: As shown on drawings. Where location of bracket-mounted units is not specified, locate as directed by Architect or Engineer.
2. Mount wall hanger brackets securely to studs or blocking using two (2) No. 10 screws with 1 ½-inch penetration into studs or blocking.
3. Mount in clean dry area, accessible to possible fire hazards and near exit.
4. Withstand a vertical force of five (5) times the weight of the charged extinguisher but not less than 100 pounds.

E. Place top of extinguisher 42 inches above floor unless otherwise noted.

F. Installation of specified fire extinguishers does not relieve Contractor of the responsibility to provide adequate fire protection in the course of his or her work.

END OF SECTION

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SECTION 11000

GENERAL REQUIREMENTS FOR EQUIPMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. General requirements applicable to mechanical equipment and systems.

B. Ensure mechanical equipment meets the requirements of this Section in addition to the specific requirements of the individual equipment specification Sections.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 01330 – Submittals
2. Section 01782 – Operation and Maintenance Information
3. Section 01825 – Equipment and System Testing
4. Section 01999 – Reference Forms
5. Section 05500 – Miscellaneous Metals
6. Section 09960 – High Performance Coatings
7. Section 10020 – Warning Signs

1.03 GENERAL REQUIREMENTS

A. Equipment shall be of new construction and comply with the following requirements:

1. Designed for stresses that may occur during fabrication, transportation, erection, and during continuous or intermittent operations.
2. Anchored, leveled, aligned, and ready for operation without binding or overloading of critical components or motors.
3. Installed with necessary appurtenances required for proper operation and installation in a neat and workmanlike manner.
4. Tested by factory trained service mechanics or engineers.

1.04 UNIT RESPONSIBILITY

A. Equipment systems shall be assembled as a unit by a single manufacturer responsible for the entire unit.

1. Responsibility extends to selecting components of the system to assure compatibility, proper operation, and compliance with specified performance requirements.
2. Unit responsibility does not relieve Contractor of responsibility to Owner for performance of the Work.

1.05 QUALITY ASSURANCE

A. Arrangement

1. The arrangement of equipment shown on the Drawings is based upon information available at the time of design and is not intended to show exact dimensions peculiar to a specific manufacturer.

2. Some features of the illustrated equipment installation may require revision to meet actual equipment installation requirements.

3. Structural supports, foundations, connected piping, and valves shown may have to be altered to accommodate the equipment provided. Additional payment will not be made for such revisions and alterations.

B. Balance: Fully assemble rotating elements in motors, pumps, blowers and centrifugal compressors before performing static and dynamic balance. Where specified, submit balancing reports, demonstrating compliance with this requirement.

1.06 SUBMITTALS

A. Comply with Section 01330.

B. General: Provide separate submittals for each equipment item or group of related equipment items.

C. Equipment Anchorage: Submit anchor bolt sizing calculations.

D. Bearing Life Calculations: Submit bearing L-10 life calculations in accordance with ABMA requirements.

1.07 OPERATION AND MAINTENANCE MANUALS

A. Furnish operation and maintenance manuals for each equipment system in accordance with the Section 01782 requirements.

1.08 PROTECTION DURING SHIPMENT

A. Shipping: Ship equipment in sealed, weather-tight, enclosed conveyances, and protected against damaging stresses during transport and handling.

B. Bearing Housings: Wrap or otherwise seal to prevent contamination by grit and dirt, and tape closed ventilation and other types of openings.

C. Repair any damaged materials to conform to the requirements of the Contract before the assembly is incorporated into the Work. The Contractor shall bear the costs arising out of dismantling, inspection, repair, and reassembly.

PART 2 - PRODUCTS

2.01 PIPING CONNECTIONS ON EQUIPMENT

A. Flanges on Equipment: Conform to dimensions and drilling specified in ANSI B16.1, Class 125 unless otherwise required by Division 15 pipe specifications or the Drawings.

B. Pipe Flanges: Conform to dimensions and drilling specified in AWWA C207, Class D, 125 lb flanges provided on connection pipe.

C. Threaded Flanges: Flat faced with standard taper pipe thread conforming to ANSI B1.20.1.

D. Pipe Threads: Conform in dimension and limits of size to ANSI B1.1, coarse thread series, Class 2 fit.

E. Flange Assembly Bolts and Nuts

1. Heavy pattern, hexagonal head, carbon steel machine bolts with heavy pattern, hot pressed, hexagonal nuts conforming to ANSI B18.2.1 and B18.2.2.

2. Threads: Unified Screw Threads, Standard Coarse Thread Series, Class 2A and 2B, ANSI B1.1.

2.02 BEARINGS

A. Service: Unless otherwise specified, equipment bearings shall be oil or grease lubricated, ball or roller type, designed to withstand the stresses of the service specified.

B. Rating

1. L-10 Rating Life: Minimum 50,000 hours unless otherwise specified. Determine rating life using the maximum equipment operating speed.

2. Determine rating in accordance with the latest revisions of AFBMA Methods of Evaluating Load Ratings of Ball and Roller Bearings.

3. Where individual equipment Sections specify higher bearing life ratings, those requirements supersede the minimum bearing life specified above.

C. Grease Lubricated Bearings

1. Fit with easily accessible grease supply, flush, drain and relief fittings, except those bearings specified to be factory sealed and lubricated.

2. Extend non-accessible grease fittings to an easily accessible location using 1/4-inch diameter stainless steel tubing as an extension tube.

3. Grease supply fittings: Standard hydraulic Alemite or Zerk type.

D. Oil Lubricated Bearings

1. Equip with either a pressure lubricating system or a separate oil reservoir type system.

2. Size oil lubrication systems to safely absorb the heat energy normally generated in the bearing under a maximum ambient temperature of 60°C.

3. Equip with a filler pipe and an external level indicator gage.

E. Incorporate bearing housings with sufficient cooling to maintain surface temperature at 65 degrees C or less for continuous operation at bearing rated load and a 50 degrees C ambient temperature, or install appropriate shielding on bearings that are accessible to touch.

F. Bearing Isolators

1. Provide for bearing where the shaft exits the bearing housing.

2. Motor Bearings: Provide Inpro/Seal style VBX vapor blocking isolators.

3. Gears: Provide Inpro/Seal “Double Runner” bearing isolator for shafts exiting the gear casing.

4. Pumps, Blowers and Compressors: Provide Inpro/Seal style VBX blocking bearing isolators where shafts exit casings/housings.

5. Pillow Block Bearings: Provide Inpro/Seal “Pop-In” style bearing isolators.

2.03 DRIVE COMPONENTS

A. V-Belt Drives

1. Design with sliding base or other suitable tension adjustment.

2. Design with service factor of at least 1.6 at maximum speed.

3. Statically balance sheaves. In addition, dynamically balance sheaves that will operate at peripheral speed of more than 5,500 feet per minute.

4. Belts: Provide anti-static belts when explosion-proof equipment or environment is specified.

B. Gear Reducers

1. Provide drives with nominal input horsepower rating equal to or greater than the nameplate horsepower of the drive motor.

2. Provide gear drives manufactured in accordance with AGMA Class II service requirements.

2.04 SHAFT COUPLINGS

A. Type and Rating: Non-lubricated, designed for a minimum of 50,000 hours operating life.

B. Equipment with a driver greater than 1/2 horsepower, and where the input shaft of a driven unit is directly connected to the output shaft of the driver, shall have its two shafts connected by a flexible coupling which can accommodate angular misalignment, parallel misalignment and end float, and which cushions shock loads and dampens torsional vibrations.

C. Provide couplings recommended by the coupling manufacturer for the specific application, considering horsepower, speed of rotation, and type of service.

D. Install couplings in conformance to the manufacturer's instructions.

2.05 GUARDS AND CAUTION SIGNS

A. Guards

1. Enclose exposed moving parts with guards that meet the requirements of federal and state OSHA requirements.

2. Enclose drive shafts to at least 7 feet above floors or operating platforms.

B. Materials

1. Fabricate guards of 14 gauge steel and expanded metal screen to provide visual inspection of moving parts without removal of the guard.

2. Galvanize after fabrication and paint with the equipment.

3. Fasteners: Type 304 stainless steel.

C. Warning Sign

1. Provide warning signs near equipment with moving parts that operate automatically or by remote control.

2. Provide warning signs with wording, size and colors specified in Section 10020.

2.06 PRESSURE TAPS AND GAUGES

A. Pressure Taps and Gauges: Unless otherwise indicated, provide on the discharge and suction sides of pumps, blowers and compressors.

B. Pressure Gauges: 4-1/2-inch size, range as specified, stainless steel case, liquid filled, safety glass, weather proof, bronze tube and brass socket, industrial grade stainless steel movement with brass hairspring, 1.5% accuracy, and 1/2-inch NPT lower connection. Supply with 1/2-inch brass gauge cock.

2.07 NAMEPLATES AND LIFTING EYES

A. Nameplates

1. Provide on each item of equipment with the specified equipment name or abbreviation and equipment number.

2. Engrave or stamp (not painted) on stainless steel and fastened to the equipment in an accessible location with stainless steel screws or drive pins.

B. Lifting Eyes

1. Provide on equipment weighing over 80 lbs.

2.08 SPARE PARTS AND LUBRICANTS

A. Spare Parts: Provide for each item of mechanical, electrical, and instrumentation equipment a supply of spare parts and special tools required for the starting, testing, adjustments, and initial operation. Pack spare parts required by individual equipment specifications:

1. Pack spare parts with individual weights less than 50 pounds in a heavily constructed painted wood box with hinged cover and a locking clasp.

2. Provide a typed inventory of spare parts stapled to the underside of the cover.

3. Tag and wrap each part in a waterproof container. Spare bearings shall be encapsulated in an airtight plastic film.

B. Lubricants: Provide for each item of mechanical equipment of the type recommended by the equipment manufacturer a supply of the lubricant for startup, testing, and initial operation.

1. Provide a list showing the required lubricants for each item of mechanical equipment. List estimated quantity of lubricant needed for a full year's operation, assuming the equipment will operate continuously.

2. Lubricants shall be products of the Owner's current lubricant supplier.

3. Limit the various types of lubricants by consolidating them, with the equipment manufacturer's approval, into the least number of different types.

2.09 ANCHOR BOLTS

A. Size anchor bolts and concrete anchors for equipment in accordance with Section 05500.

2.10 FACTORY APPLIED COATINGS

A. Ship each item of equipment to the site of the work with a shop applied prime coating prepared in accordance with the requirements of Section 09960 and compatible with the finish coatings.

B. Finish Painting of Motors: Factory-apply finish coats using manufacturer's standard coating, unless otherwise specified in Section 09960.

2.11 SPECIAL TOOLS AND ACCESSORIES

A. Furnish with each piece of equipment all tools, instruments, or accessories of a special nature that are required to assemble, disassemble, maintain, or repair any item of equipment.

1. Tag and mark each piece indicating their service and the piece of equipment for which their use is intended.

2. Include a list and description or pictorial representation of all special tools required for a given piece of equipment for insertion into the equipment operation and maintenance manual.

2.12 FASTENERS AND DIELECTRIC ISOLATION

A. Fasteners for Aluminum: Stainless steel.

B. Isolate steel surfaces, other than stainless steel, from aluminum with stainless steel, neoprene, non-metallic washers or other acceptable material.

C. Dissimilar Metals: Protect from galvanic corrosion by means of pressure tapes, coatings, or isolators.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install, align and test each item of equipment within the tolerances recommended by the equipment manufacturer.

B. When specified in individual Sections, install and test equipment under the direction of installation engineers who have been factory trained by the equipment manufacturer.

C. Perform all work in accordance with manufacturer's recommendations.

3.02 QUALITY CONTROL

A. Test equipment in accordance with Section 01825 and the individual equipment Section.

B. Furnish written certification from the equipment manufacturers that each item has been installed, aligned, and tested correctly and that the installation meets the manufacturer's requirements for efficient, trouble-free operation. Utilize Manufacturer’s Installation Certification Form provided in Section 01999.

C. Equipment manufacturer’s certification shall not be construed as relieving the Contractor of his overall responsibility for this portion of the work.

END OF SECTION

SECTION 11002

EQUIPMENT MOUNTING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Equipment mounting requirements, including fabricated steel equipment bases, concrete equipment pads, supports, anchorage, and accessories.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 01330 – Submittals
2. Section 05500 – Miscellaneous Metals
3. Section 09960 – High Performance Coatings

1.03 QUALITY ASSURANCE

A. Provide supports, anchorage, and equipment mounts that are sized and designed to resist the calculated forces and that are in accordance with the manufacturer's recommendations, the current International Building Code (IBC), and industry standards requirements.

1.04 DESIGN REQUIREMENTS

A. Design equipment mounts and anchorages to resist the minimum lateral force required by the latest edition of the IBC, the manufacturer of the equipment, or a lateral seismic force of 60% of the operating weight of the equipment, whichever is greater.

B. Equipment anchor bolt sizes shown on the Drawings are the minimum required size.

C. Equipment anchorage design and calculations shall be prepared and signed by a civil or structural engineer currently registered in the state where equipment is installed.

1.05 MOUNTING REQUIREMENTS

A. Mount equipment and driver on a common fabricated steel baseplate with ample rigidity to support equipment and maintain shaft alignment without excessive deflection.

B. Mount equipment baseplates on concrete equipment pads.

1.06 SUBMITTALS

A. Comply with Section 01330.

B. Shop Drawings: Provide drawings of equipment bases and anchorage details.

C. Anchorage Calculations: Submit stamped and signed anchor bolt sizing calculations.

PART 2 - PRODUCTS

2.01 ANCHOR BOLTS AND CONCRETE ANCHORS

A. Provide anchor bolts and concrete anchors in accordance with Section 05500.

2.02 CONCRETE EQUIPMENT PADS

A. Construct concrete pedestals at least 6 inches wider and longer than the steel or cast base so that the distance between the anchor bolts and the edge of concrete is at least 3 inches.

B. Unless otherwise shown or specified, all conduits, piping connections, drains, etc. shall be enclosed by the concrete base.

C. Shape concrete pedestals to drain away from the base.

D. Allow concrete to cure 14 days or until the concrete has cured to 75 percent of its specified compressive strength before placing equipment on the concrete pedestal.

E. Do not start equipment placed on the concrete pedestal until the concrete has cured for 28 days or to 100 percent of its specified compressive strength.

2.03 STRUCTURAL STEEL EQUIPMENT BASES

A. Provide structural steel bases with thickened steel pads for doweling.

1. Fabricate equipment base using continuous welds to seal seams and contact edges between steel members.

2. Grind welds smooth.

B. Design equipment bases with perimeter steel beams, intermediate stiffeners and baseplate.

1. Provide perimeter steel beams with minimum depth equal to 1/10th of the longest dimension of the base.

2. Beam depth need not exceed 14 inches provided that the baseplate deflection is kept within acceptable limits to minimize misalignment, as determined by the manufacturer.

C. Provide grout holes for the bases of equipment where vibration isolation is not specified.

D. Provide minimum 1-inch thick steel mounting baseplate for equipment with drivers 20 horsepower and larger.

E. Shop-apply prime coat prepared in accordance with the requirements of Section 09960 and compatible with the finish coatings

PART 3 - EXECUTION

3.01 GENERAL

A. Connect piping to equipment with flexible connections and/or expansion joints such that the intended use of these joints is maintained in the piping system.

B. Coordinate the location of electrical conduit and piping penetrations within the concrete pad and equipment base.

1. Stub-up penetrations on the same side of the equipment as required for connection to the equipment.

2. Locate equipment drains for proper drainage away from equipment.

3.02 EQUIPMENT MOUNTING

A. Mount equipment on equipment baseplates using stainless steel shims so that equipment and driver are level in both directions and mounted within machined areas on baseplate. Do not use wedges to obtain level and alignment.

B. Utilize templates for placement of anchor bolts prior to placing concrete for equipment pad.

C. Apply a non-seize or non-galling compound on the threads of anchor bolts and concrete anchors.

3.03 SHAFT ALIGNMENT

A. After the complete unit has been installed on the equipment pad and leveled, check the factory shaft alignment by disassembling coupling and measuring angular and parallel orientations.

B. Use reverse-indicator dial or laser type alignment equipment to align shafts to within the manufacturer's required tolerance. Allow for thermal expansion, spacer coupling length and other factors that affect proper shaft alignment.

3.04 GROUTING EQUIPMENT BASED

A. After alignment has been completed, tighten anchor bolts and grout between equipment base and equipment pad. Use non-shrink and non-ferrous grout no less than 7/8 inch and no more than 1-5/8-inches thick.

B. Allow 48 hours for grout to harden and then remove jacking screws. Re-check torque on anchor bolts and re-check shaft alignment, making corrections as necessary.

END OF SECTION

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SECTION 11241

EMULSION POLYMER FEED SYSTEM

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Skid-mounted polymer system with interconnecting piping and wiring complete within skid limits.

B. Equipment included with the polymer system includes:

1. Motor-driven mixing chamber
2. Primary and post-dilution water controls
3. Neat polymer pump
4. System Controls

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section:

1. Section 01330 – Submittals
2. Section 01600 – Materials and Equipment
3. Section 01612 – Seismic Design Criteria
4. Section 01999 – Reference Forms
5. Section 11000 – General Requirements for Equipment
6. Section 11002 – Equipment Mounting

1.03 QUALITY ASSURANCE

A. References:

1. This section contains references to the following documents. They are a part of this section as specified and modified. Where a referenced document contains references to other standards, those documents are included as references under this section as if referenced directly. In the event of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.
2. Unless otherwise specified, references to documents shall mean the documents in effect at the time of Advertisement for Bids or Invitation to Bid (or on the effective date of the Agreement if there were no Bids). If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued. Where document dates are given in the following listing, references to those documents shall mean the specific document version associated with that date, regardless of whether the document has been superseded by a version with a later date, discontinued or replaced.

Reference	Title
ASTM A276	Stainless Steel Bars and Shapes
ASTM A320/A320M	Alloy/Steel Bolting Materials for Low-Temperature Service
NEMA 250	Enclosures for Electrical Equipment (1,000 Volts Maximum)
NFPA 70	National Electrical Code (NEC)

B. Unit Responsibility:

1. Assign unit responsibility, as specified in Section 11000 1.04 Unit Responsibility, to the manufacturer of the Polymer Feed System provided under this section. Provide a completed, signed, and notarized Certificate of Unit Responsibility (Section 01999) shall be provided.

C. Factory Tests:

1. The specified equipment with all mechanical and electrical components shall be completely assembled as a skid at the manufacturer's facility. Pump casings shall be hydrostatically tested to twice the discharge head. The skid shall be non-witnessed tested for desired functionality and operation at the manufacturer's facility prior to the shipment.

D. Shipment, Protection, and Storage:

1. Equipment shipment, protection, and storage shall conform to the requirements specified in Section 01600.

E. Manufacturer's Experience:

1. Equipment furnished under this section shall be of a design and manufacture that has been successfully used in similar applications. The manufacturer shall have furnished equipment for a minimum of five similar applications that have been in successful operation for at least five years. A list of these installations complete with installation description, contact names, addresses, and telephone numbers shall be provided.

F. Warranty And Performance Affidavit:

1. The packaged aqueous polymer blending unit shall be warranted against defects in materials and workmanship of a period of five years.

1.04 SUBMITTALS

A. The following submittals shall be provided in accordance with Section 01330:

1. A copy of this specification section, with addendum updates included, and all referenced and applicable sections, with addendum updates included, with each paragraph check-marked to indicate specification compliance or marked to indicate requested deviations from specification requirements. A check mark (✓) shall denote full compliance with a paragraph as a whole. If deviations from the specifications are indicated, and therefore requested by the Contractor, each deviation shall be underlined and denoted by a number in the margin to the right of the identified paragraph, referenced to a detailed written explanation of the reasons for requesting the deviation. The City shall be the final authority for determining acceptability of requested deviations. The remaining portions of the paragraph not underlined will signify compliance on the part of the Contractor with the specifications. Failure to include a copy of the marked-up specification sections, along with justification(s) for any requested deviations to the specification requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration.

2. A copy of the contract document control diagrams and process and instrumentation diagrams relating to the submitted equipment, with addendum updates that apply to the equipment in this section, marked to show specific changes necessary for the equipment proposed in the submittal. If no changes are required, the drawing or drawings shall be marked "no changes required". Failure to include copies of the relevant drawings with the submittal shall be cause for rejection of the entire submittal with no further review.

3. Completed Certificate of Unit Responsibility attesting that the Contractor has assigned, and that the manufacturer accepts, unit responsibility in accordance with the requirements of this Section and Section 11000 1.04 Unit Responsibility. No other submittal material will be reviewed until the certificate has been received and found to be in conformance with these requirements.

4. Motor Data Sheets.

5. Manufacturer’s specifications verifying the equipment performance. Motor data sheet.

6. Dimensional drawings, showing required access and clearances, including any layout requirements of the equipment.

7. Equipment mounting information as specified in Section 11002.

8. Manufacturer's catalog data and shop drawings confirming dimensions, weight, construction, materials, and installation details.

9. Descriptive control sequences of the Polymer Feed System manual and automatic operation.

10. Equipment control panels:

    a. Schematic diagrams, including connections to remote equipment.

    b. Drawings showing scaled front and interior views.

    c. Bill of materials of components.

    d. Marked product literature for all components.

11. Marked product literature for all instruments and controls.

12. Installation reference list including contact information as specified in this section.

13. Manufacturer’s written certification that the polymer blending unit is suitable for the required polymer. The certification shall state that no additional equipment, such as aging tanks, is necessary.

14. Predicted performance curves developed for the specific application. Performance curves shall plot speed, capacity, head, horsepower, efficiency, and NPSH required for the specified operating range for the pumps provided on the skid.

15. Shop drawings including location of all piping, electrical, instrumentation, and structural connections.

16. Descriptive control sequences of the polymer blending unit’s manual and automatic operation.

17. PLC program listing printout and Input/Output List

18. HMI screen printouts.

19. Bracing and anchoring design calculations per the requirements of Section 01612.

1.05 ANCHORING AND BRACING

A. Mechanical, instrumentation and control, electrical, nonstructural systems, components, and elements permanently attached to the structure shall be anchored and braced to resist seismic forces. Contractor shall design the structural components, seismic attachment, braces, and anchors to the structure for all parts or elements of the mechanical and electrical systems in accordance with Section 01612.

PART 2 - PRODUCTS

2.01 SYSTEM DESCRIPTION

A. Multi-Zone Mixing Chamber

1. Polymer and water shall be mixed in a chamber designed to create sufficient mixing energy.
    a. High shear zone of the mixing chamber shall have a mechanical mixing impeller for successful initial activation and the low shear zone shall not have a mixing impeller to avoid damaging polymer molecules.
    b. Solution shall undergo a tapered mixing intensity slope as it exits the initial high sheer zone and passes through a second low shear zone, isolated by a baffle.
    c. The design shall have primary mixing and post-dilution to expedite the polymer activation process by maximizing the value of breaker surfactant present in emulsion polymer, as per the AWWA Standard for Polyacrylamide (ANSI/AWWA B453-06).
    d. Polymer activation efficiency shall be consistent over the dilution water range.
    e. The volume of the mixing chamber shall be a minimum of 1.0 gallon to provide sufficient residence time for activating and disentangling polymer molecules.
2. Mixing chamber shall be transparent with acrylic barrel to allow viewing of mixing intensity. Opaque mixing chambers shall be unacceptable.
3. Impeller shall be driven by a 1 HP maximum washdown duty motor.
    a. Motor shall be TEFC.
    b. Impeller speed shall be 3450 rpm, minimum.
    c. Motor shall be direct-coupled to impeller shaft.
4. Mixing chamber shall include a stainless steel injection check valve.
5. Mixing impeller shall be cast brass construction with holes drilled on the backside of the impeller. The impeller, when rotating, shall pull fluid from around the mechanical seal pocket to eliminate the need for a separate mechanical seal flushing system.
6. In order to quantify the mixing intensity in the mix chamber, the applied horsepower shall be defined by measuring the difference in torque when the mix chamber is empty versus being full of water. This value shall be the basis of determining the mixing intensity defined as "G" value.
7. The G-value in the high shear mixing zone shall exceed 14,000 sec-1 to effectively disperse polymer gels to prevent fisheye formation.
8. The G-value in the low shear mixing zone shall be lower than 3,500 sec-1 to avoid damaging polymer chains.

B. Dilution Water Control

1. Dilution water shall be split into two streams.
    a. Primary water flow shall supply the mixing chamber.
    b. Secondary water flow shall be used to post dilute the activated polymer stream.
    c. These two streams shall be completely blended by a static mixer prior to exiting the unit.
2. Unit shall have an electric solenoid valve for on/off control of total dilution water flow. Valve shall have brass body with NBR seals and NEMA 4X rated coil enclosure.
3. Flow indicators and flow control valves shall be provided for each dilution water stream.
4. Dilution water and solution output connections shall include 304 stainless steel unions connected to the chassis.

C. Pump

1. Unit shall have a neat polymer metering pump.
    a. Pump shall be positive displacement, progressing cavity type.
    b. Rotor shall be 316 stainless steel.
    c. Stator shall be Viton.
    d. Pump shall have mechanical seal. Pumps supplied with packing seals shall not be considered equal.
    e. Rotor speed shall not exceed 500 rpm.
2. Pump shall be driven by a 1/2 HP, TEFC, AC motor.
    a. Variable speed shall be provided by a VFD controller.
    b. Motor shall be direct-coupled to a gear reducer.
    c. Pump shall be direct-coupled to gear reducer.
3. Pump shall include a pressure relief valve and pressure gauge located on the discharge side of the pump and piped to the pump suction. Pressure relief valve shall be PVC construction with Viton seals. Systems utilizing pressure relief on the mix chamber discharge and requiring a connection to drain shall not be considered equal.
4. A suitably-sized calibration cylinder shall be mounted to the frame with PVC isolation ball valves. Cylinder shall be calibrated in mL, and be constructed of clear PVC with slip on cap and 1/2 inch NPT vent connection.

D. Controls

1. System shall be supplied with waterproof control enclosure. Unit shall be powered through an on-off-remote circuit controlled by a three position switch.
    a. In the remote switch position, the unit shall accept a run signal.
    b. Unit is manually powered in the on position.
2. A VFD shall be supplied to vary pump speed. A keypad shall be mounted on the motor control enclosure for VFD control and display.
    a. VFD shall accept single phase power and convert it to three phase output.
    b. Up/Down arrows shall control motor speed in manual mode.
    c. VFD shall accept 4-20 mA input signal to vary pump speed in automatic mode.

3. Unit shall accept a 4-20 mA analog signal to pace the polymer metering pump.

   a. The controller shall also have manual motor speed control via a potentiometer for touchpad for VFD.

4. Unit shall detect loss of water flow, sensing that water flow has been interrupted for any reason, will place the polymer pump and mix chamber on standby and will restart it automatically when flow is restored.

5. An integral timer shall monitor loss of flow and energize contacts indicating alarm after 15 seconds of continuous loss.

6. The following status and alarm signals shall be provided as dry-contacts.

   a. In Remote status

   b. Running status

   c. Fail Alarm status

7. Unit shall provide a 4-20 mA analog output signal proportional to pump speed for remote monitoring.

2.02 TECHNICAL DATA

A. Connections – Plumbing

1. Dilution water inlet, 1-1/2” FNPT

2. Neat polymer inlet, 1/2” FNPT

3. Solution discharge, 1-1/2” FNPT

B. Connections – Electrical

1. Standard, grounded male plug – 120 / 1 / 60, 17 amps

2. Terminal blocks – 4-20 mA signal input

3. Terminal blocks – dry contact input for remote start

4. Terminal blocks – dry contact alarm output

5. Terminal blocks – dry contact run output

C. Dimensions

1. Frame – 37” wide x 28” deep x 47” high (94x71x120 cm)

D. Materials of Construction

1. Structural frame – 304 stainless steel

2. Plumbing – PVC, nylon, stainless steel

3. Mixing chamber – PVC, acrylic

E. Performance

1. Dilution water – 120-1200 GPH primary mixing (454-4542 LPH)
   120-1200 GPH post dilution (454-4542 LPH)

2. Metering pump – 0.15-3.0 GPH neat polymer

2.03 MANUFACTURERS

A. The CITY and ENGINEER require the following candidate manufacturer to provide the equipment and/or products to be furnished under this section. The CITY and ENGINEER believe the manufacturer is capable of producing equipment and/or products that will satisfy the requirements of this section. This statement, however, shall not be construed to

mean that the named manufacturer's standard product will comply with the requirements of this section. For the purpose of standardization for operations, maintenance, spare parts, and services, the manufacturer shall be PolyBlend® MM2400- P3AA Polymer Feed System as manufactured by UGSI Chemical Feed, Inc., 1901 W. Garden Rd., Vineland, NJ 08360, Phone: 856.896.2160.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install equipment per the contract documents and manufacturer's recommendations.

3.02 WARRANTY

A. The standard warranty extends for a minimum period of twelve (12) months from the date of start-up by an authorized manufacturer technician or eighteen (18) months from the date of shipment, whichever occurs first.

B. Damage due to makeup water particulates will not be considered as a warranty defect and will be the responsibility of the owner.

3.03 ACCESSORIES

A. Pressure reducing valve: A suitably sized pressure reducing valve shall be supplied for installation in the dilution water line. Pressure reducing valve shall be constructed of bronze with adjustable output pressure of 25-75 psig to reduce incoming line pressure variations. Pressure reducing valve shall be as manufactured by Watts.

B. Drumstick: A rigid drumstick suitable for mounting in the neat polymer drum bung or vent connection shall be supplied to completely evacuate the drums contents. The drumstick shall be supplied with 2 inch NPT and 3/4 inch NPT connections for connection to either port. Drumstick construction shall be PVC.

C. Drum Mixer: A bayonet mount drum mixer shall be supplied for mixing neat polymer drum contents. Mixer shall include a 1/2 hp, 1725 rpm TEFC motor with 28 inch long mixer shaft, two 4 inch long collapsible mixing blades, 8 foot power cord and on/off switch. Mounting plate shall include 2 inch bung mount and shall be constructed of mild steel with powder epoxy coating. Electrical requirements shall be 120 VAC/ 1 phase/ 60 Hz.

D. Tote Suction Hose: A tote suction hose with isolation ball valve, quick disconnect and 10 feet of 1 inch braided PVC hose shall be supplied for connection to neat polymer tote.

E. A neat polymer thermal loss of flow switch shall be supplied on the discharge of the neat polymer metering pump to detect absence of polymer flow. Thermal flow switch assembly shall include sensor, flow block and controls. Alarm output contacts shall be supplied for the plant control system after adjustable time delay. Neat polymer flow must be greater than 0.25 gph for switch to function.

F. Spare parts kit: Spare parts kit shall include mechanical seal, mixing chamber o-rings, injection check valve, and pump stator.

END OF SECTION

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SECTION 15050

PIPING SYSTEMS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Systems of process piping and general requirements for piping systems.

B. Detailed specifications for the components listed on the Piping System Specification Sheets (PIPE SPEC) are found in Division 15 and other technical specifications.

C. Use this section in conjunction with those sections.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 01330 – Submittals
2. Section 01600 – Materials and Equipment
3. Section 02300 – Earthwork
4. Section 09960 – High Performance Coatings
5. Section 15060 – Pipe Hangers and Supports
6. Section 15076 – Piping and Valve Identification Systems
7. Section 15097 – Seismic Restraints for Piping
8. Section 15110.5 – Valves and Appurtenances
9. Section 15115.1 – Eccentric Plug Valves
10. Section 15122 – Piping Connections
11. Section 15141 – Steel Pipe
12. Section 15143 – Ductile Iron Pipe
13. Section 15145 – Polyvinyl Chloride (PVC) Pressure Pipe
14. Section 15201 – Stainless Steel Piping
15. Section 15250 – Insulation for Exposed Piping and Equipment
16. Section 15996 – Testing Pressure Pipe

1.03 DEFINITIONS

A. Pressure terms used in Division 15 are defined as follows:

1. Maximum: The greatest continuous pressure at which the piping system operates.
2. Test: The hydrostatic pressure used to determine system acceptance.

B. Hazardous Gas Systems

1. Propane
2. Natural gas
3. Sludge gas
4. Hydrogen

5. Other flammable gases

1.04 SUBMITTALS

A. Comply with Section 01330.

B. Equipment and Piping Coordination and Installation Drawings

1. The drawings show only the general arrangements of the project equipment, piping and appurtenances.

2. Prepare and submit coordination and installation drawings.

a. Show the specific locations and dimensions of equipment, tanks, control panels, piping, pipe hangers and supports, seismic restraints for piping, trench and rack mounted piping, valves, appurtenances, platform gratings, and related items.

b. Base upon dimensions for the actual equipment to be furnished from the accepted shop drawings.

3. The coordination and installation drawings are required for the following systems:

a. Chemical storage, feed, and piping systems.

b. Equipment and associated piping in Division 11.

c. HVAC and plumbing piping systems.

d. Exposed and buried piping in Division 15, Sections 14143, 15145 and 15201.

4. Drawing Requirements

a. Prepared with AutoCAD 2010 or later software.

b. Use PC compatible hardware platform using Microsoft Windows XP operating system.

c. Submit drawing files with each piping system print.

d. Submit drawing files on rewritable CDROM disks.

e. Print at a minimum scale of 3/8" = 1', on a minimum sheet size of 11" x 17".

f. Show piping in plan and section views, or alternatively, as isometric piping spool drawings.

1) Piping of nominal size less than 8" may be single line with scaled lay lengths and fittings.

2) Show piping of size 8" and greater double line with scaled flanges, lay lengths, and fittings. Each pipe run shall be dimensioned.

3) Show all pipe supports, thrust restraints, and seismic bracing.

4) Show all devices indicated on the mechanical layout and schematic drawings and the P&ID drawings.

5. During preparation of the drawings, provide interface and coordination between all equipment suppliers and subcontractors, and, including as a minimum, the structural, architectural, mechanical, electrical, and instrumentation and control elements of the work, including the process and instrumentation diagrams.

6. Include load and sizing calculations for pipe supports, thrust restraints, seismic bracing and related items which have been prepared, stamped, and signed by a professional civil, mechanical, or structural engineer licensed by the State of California. See also Sections 15060 and 15097.

7. Complete submittal and review of the coordination and installation drawings at least 30 days prior to commencement of piping fabrication for each system.

8. For piping systems that are field-fabricated, complete submittal and review at least 30 days prior to construction of each system.

1.05 QUALITY ASSURANCE

A. Fittings and coupling compatibility: To assure uniformity and compatibility of piping components, fittings and couplings for grooved end piping systems and plastic piping systems shall be furnished by the same manufacturers.

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Comply with Section 01600.

PART 2 - PRODUCTS

2.01 PIPING MATERIALS

A. Unless otherwise specified, select piping materials, including pipe, gaskets, fittings, connection and joint assemblies, linings and coatings, from those listed on the piping system specification sheets.

B. Comply with detailed specifications for each type of pipe and piping appurtenance specified in Division 2 and the other sections of Division 15.

C. If, in addition to the pipe service symbol, the Drawings contain specific callouts for pipe materials, the information on the Drawings governs on an exception basis.

D. Gasket Material: As specified for individual piping systems and as specified in Section 15122.

2.02 VALVES

A. For same size and service provide from a single valve manufacturer.

B. Provide packing made from non-asbestos material.

C. Ensure actual lengths of valves are within 1/16” (plus or minus) of the manufacturer’s specified length.

D. Flanges: meet the requirement of ANSI B16.5.

E. Push-on and mechanical joints: meet the requirements of AWWA C111.

F. Valve operators are specified in Sections 15110.5.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Location

1. Provide as specified except for adjustments to avoid architectural and structural features and coordinate with electrical construction.

B. Piping Sizes

1. Where the size of piping is not specified, provide piping of the sizes required by UPC.

C. Pipe Support, Anchorage, and Seismic Bracing

1. Support by anchor brackets, guides, saddles or hangers.

2. See Drawings and specifications for acceptable types of supports, guides, saddles, hangers and structure attachments for general pipe support, expansion/ contraction and for seismic bracing, as well as anchorage details.

3. Minimum spacing: as shown or specified.

4. Vertically support piping by anchor brackets, guides, saddles or hangers and seismically brace where indicated to resist lateral load.

5. Provide support on each run at each change of direction.

6. Material: Type 316 stainless steel as indicated on the mechanical detail drawings and in Sections 15060 and 15097.

7. Unless otherwise specified do not use existing pipes and supports to support new piping.

D. Anchorage for Buried Piping

1. Anchor all plugs, caps, tees and bends in buried pressure piping systems using restrained joints as specified.

2. Unless specified otherwise, reaction backing consisting of concrete thrust blocks is not an acceptable substitute for restrained joints and will not be permitted.

E. Bedding and Backfill

1. Bedding and backfill for buried piping: as specified in Section 02300.

F. Pipe Identification

1. Place plastic tracer tape and magnetic tracer tape as specified in Section 15076 above the centerline of each buried pipe.

2. Identify exposed interior and exterior piping, as specified in section 15076.

G. Pipe Insulation

1. Unless otherwise noted on the drawings or specified, insulate all exposed piping of size 4” and less installed outdoors and in areas and locations subject to freezing.

2. Insulate exposed piping in unheated ceiling or attic space areas.

3. Insulate exposed piping in areas above suspended or other type ceilings or above electrical equipment for condensation control.

4. Comply with Section 15250.

3.02 TESTING

A. General

1. Upon completion of piping, but prior to application of insulation on exposed piping, test the piping systems.

a. Pressures, media and test durations: as specified in the pipespec.

b. Isolate equipment which may be damaged by the specified test conditions.

c. Use calibrated test gages and calibrated volumetric measuring equipment to determine leakage rates.

d. Select each test gage so that the specified test pressure falls within the upper half of the gage’s range.

e. Unless otherwise specified, notify the Construction Manager 24 hours prior to each test.

f. Test in accordance with Sections 15996 .

2. Unless otherwise specified, tests include existing piping systems which connect with new pipe systems.

   a. Test existing pipe to the nearest existing valve.

   b. Repair any piping which fails the test.

   c. Repair of existing piping will be considered and paid for as extra work.

B. Gas, Air, and Vapor Systems

1. Unless otherwise specified, comply with the following:

Pipeline Size	Specified Test Pressure	Testing Medium
2-inch and smaller	75 psi or less	Air or water
2-inch and smaller	Greater than 75 psi	Water
Greater than 2-inch	3 psi or less	Air or water
Greater than 2-inch	Greater than 3 psi	Water

2. Allowable leakage rate for hazardous gas systems, insulated systems, and systems tested with water is zero at the specified test pressure throughout the specified test period.

3. Allowable leakage rate for other systems tested with air is a maximum pressure drop of 5% of the specified test pressure for the duration of the period. Prior to starting a test interval using air, set air at ambient temperature and specified test pressure.

C. Liquid Systems

1. Allowable leakage rate is zero at the specified test pressure throughout the specified duration for the following systems:

   a. Exposed piping, buried insulated piping, and buried or exposed piping carrying liquid chemicals.

D. Drains

1. Building and structure drain systems, other than pumped drain systems, shall be tested in accordance with UPC.

3.03 CLEANING AND FLUSHING

A. General

1. Clean piping systems following completion of testing and prior to connection to operating, control, regulating, or instrumentation equipment.

2. The Contractor may clean and test sections of buried or exposed piping systems. Use of this procedure, however, will not waive the requirement for a full pressure test of the completed system.

3. Unless specified otherwise, first clean piping 24” in diameter and smaller by pulling a tightly fitting cleaning ball or swab through the system.

4. Piping larger than 24” in diameter may be cleaned manually or with a cleaning ball or swab.

B. Temporary Screens

1. Upon completion of the cleaning, connect the piping systems to related process equipment.

2. Provide with locator tabs that remain visible from the outside when the screens are in place.

3. Insert in pipelines at the suction of pumps and compressors in accordance with the following table:

Equipment suction or piping size, inches	Maximum screen opening, inches
0 –1	1/16
1-1/4 – 3	1/4
3-1/2 – 6	1/2
Over 6	1

4. Maintain the screens during testing, initial start-up, and initial operating phases of the commissioning process.

   a. In special cases, screens may be removed as required for performance tests.

   b. Remove temporary screens and make the final connections after the screens have remained clean for at least 24 consecutive hours of operation. Systems handling solids are exempted.

C. Gas and Air Systems (Not Used)

D. Liquid Systems

1. After completion of cleaning, unless otherwise specified, flush with clean water.

2. With temporary screens in place, circulate the liquid through the piping system using connected equipment for a minimum period of 15 minutes and until no debris is collected on the screens.

3.04 PIPING SPECIFICATION (PIPESPEC)

A. Piping and valves for groupings of similar plant processes or types of service lines are specified on individual piping specifications (PIPESPECS).

B. Piping services are grouped according to the chemical and physical properties of the fluid conveyed and/or by the temperature or pressure requirements.

C. Each grouping of services (PIPESPEC) is identified by a piping system number.

D. Piping services specified in the PIPESPECS and on the Plans are alphabetically arranged by designated service symbols as shown in Table A.

E. Table A also indicates the system number, fluid category, and pipe marker background color of each service.

Table A. Piping Services

Symbol	Service	System	Fluid Category	Pipe Marker Background
D	Drain, Process	14	Drain	Green
FTH	Frothing	19	Chemical	Yellow
MS	Mixed Sludge	16	Sludge	Green
POL	Polymer	19	Chemical	Yellow
PSC	Primary Scum	16	Scum	Green

Symbol	Service	System	Fluid Category	Pipe Marker Background
SL	Sludge	16	Sludge	Green
WW	Wash Water	11	Water	White
RCW	Reclaimed Water	11	Reclaimed Wastewater	Purple

Notes:
1. This table contains only those pipe services which require work under this contract.

3.05 PIPING SPECIFICATION SHEET—PIPESPEC – SYSTEM 11

A. Piping Symbol/Service:

1. WW – Wash Water
2. RCW – Reclaimed Water

B. Test Requirements:

1. Medium: Water
2. Pressure:
   a. WW: 150 psi
3. Duration: 120 minutes

C. Gasket Requirements:

1. Flange: Compressed gasketing consisting of organic fibers (Kevlar) and neoprene binder
2. Push-on/Mech Cpl: Nitrile or Neoprene

D. Exposed Pipe and Valves (See Remarks): (See drawings for pipe size and valve type.)

1. (3” and smaller)
   a. Pipe:
      1) Steel; ASTM A53, galvanized.
      2) Conn; taper threaded, ANSI B1.20.1. See Remarks.
      3) Ftgs; malleable iron, ASTM A197, ANSI B16.3, Class 150, galvanized.
      4) PVC, Sch 80, where shown on Drawings. Ref. Section 15145.
   b. Valves:
      1) Ball
         a) Jamesbury Fig. 351,
         b) Nibco T-580,
         c) or equal.
      2) Globe
         a) Crane 7TF or 17TF,
         b) Lunkenheimer 123 or 214,
         c) or equal.
      3) Swing check
         a) Crane 137,
         b) Lunkenheimer 230,

c) or equal.

2. (4” thru 12” Pipe)

a. Pipe

1) DIP; AWWA C151, per Section 15143.

2) Connections; Flanged. See Remarks.

3) Fittings; DIP per AWWA C110 or AWWA C153

4) Linings and coatings

a) All pipe and fittings shall be double thickness cement mortar lined per AWWA C104 and coated per Section 09960.

b. Valves:

1) Butterfly: Ref. Section 15110.5.

2) Check

a) Ref. Section 15110.5.

E. Buried and Encased Pipe and Valves (See Remarks): (See drawings for pipe size and valve type. Omit coating on encased pipe.)

1. (3” and smaller)

a. Pipe

1) PVC; ASTM D1784, Class 12454-B, ASTM D1785, Sch 80.

2) Ref. Section 15145.

3) Provide plastic and magnetic tracer tape.

4) Conn; plain end; solvent weld with threaded or flanged adapters for valves.

5) Ftgs; PVC, Sch. 80, socket weld.

b. Valves

1) Gate

a) Ref. Section 15110.5, with extension stem and valve box.

b) Coating to be cement mortar.

2. (4” and Larger)

a. Pipe

1) DIP; AWWA C151, per Section 15143.

2) Connections; Restraint joint per Section 15143.

3) Fittings; DIP per AWWA C110 or AWWA C153.

4) Lining and Coating; All pipe and fittings: double thickness cement mortar lined per AWWA C104 and

5) Polyethylene encapsulated per AWWA C105.

b. Valves

1) Eccentric Plug; per Section 15115.1

F. Remarks: Concrete encase all piping beneath structures.

3.06 PIPING SPECIFICATION SHEET—PIPESPEC – SYSTEM 14

A. Piping Symbol/Service

1. D—Process Drain

B. Test Requirements

1. Medium: Water
2. Pressure: 50 psig
3. Duration: 120 minutes

C. Gasket Requirements

1. Flange: Compressed gasketing consisting of organic fibers
2. (Kevlar) and neoprene binder
3. Push-on/Mech Cpl: Nitrile or Neoprene

D. Exposed Pipe and Valves: (See drawings for pipe size and valve type.)

1. (1" thru 3")
   a. Pipe
      1) Steel; ASTM A53, galvanized. Ref. Section 15141.
      2) Conn; taper threaded, ANSI B1.20.1
      3) Ftgs; malleable iron, ASTM A197, ANSI B16.3, Class 150, galvanized.
   b. Valves
      1) Eccentric Plug; per Section 15115.1
2. (4" and Larger)
   a. Pipe
      1) DIP; AWWA C151, per Section 15143.
      2) Connections; Flanged.
      3) Fittings; DIP per AWWA C110 or AWWA C153
      4) Linings and coatings; All pipe and fittings shall be double thickness cement mortar lined per AWWA C104 and coated per Section 09960.
   b. Valves
      1) Eccentric plug; per Section 15115.1

E. Buried and Encased Pipe and Valves: (See drawings for pipe size and valve type. Omit coating on encased pipe.)

1. (3" and smaller)
   a. Pipe
      1) PVC; ASTM D1784, Class 12454-B, ASTM D1785,
      2) Sch 80. Ref. spec Section 15145.
      3) Provide plastic and magnetic tracer tape.
      4) Conn; plain end; solvent weld with threaded or flanged adapters for valves.
      5) Ftgs; PVC, Sch. 80, socket weld.
   b. Valves: Not applicable
2. (4" and Larger)
   a. Pipe
      1) DIP; AWWA C151, per Section 15143.
      2) Connections; Restraint joint per Section 15143.

3) Fittings; DIP per AWWA C110 or AWWA C153.

4) Lining and Coating: All pipe and fittings: double thickness cement mortar lined per AWWA C104 and Polyethylene encapsulated per AWWA C105.

b. Valves

1) Eccentric Plug; per Section 15115.1.

F. Remarks:

1. Concrete encase all piping beneath structures.

2. Omit polyethylene encasement on concrete encased pipes.

3.07 PIPING SPECIFICATION SHEET—PIPESPEC – SYSTEM 16

A. Piping Symbol/Service

1. MS – Mixed Sludge

2. PSC – Primary Scum

3. SL – Sludge

B. Test Requirements

1. Medium: Water

2. Pressure: 150 psig

3. Duration: 120 minutes

C. Gasket Requirements

1. Flange: Compressed gasketing consisting of organic fibers (Kevlar)and neoprene binder

2. Push-on/Mech Cpl: Nitrile or Neoprene

D. Exposed Pipe and Valves (See drawings for pipe size and valve type.)

1. Pipe all sizes

a. DIP; AWWA C151, per Section 15143.

b. Connections; Flanged.

c. Fittings; DIP per AWWA C110 only. AWWA C153 not permitted.

d. Linings and Coatings

1) All pipe and fittings: glass-lined per Section 15143 and coated per Section 09960.

2. Valves

a. Eccentric Plug; per spec Section 15115.1, glass-lined to match pipe lining.

E. Buried and Encased Pipe and Valves: (See drawings for pipe size and valve type. Omit coating on encased pipe.)

1. Pipe all size

a. DIP; AWWA C151, per Section 15143.

b. Connections; Restraint joint per Section 15143.

c. Fittings; DIP per AWWA C110 only. AWWA C153 not permitted.

d. Provide plastic and magnetic tracer tape.

e. Lining and Coating

1) All pipe and fittings: glass-lined per Section 15143 and Polyethylene encapsulated per AWWA C105.

2. Valves

a. Eccentric Plug

1) Per Section 15115.1, glass-lined to match pipe lining.

2) Coating: M-1 per Section 09960

F. Remarks:

1. Concrete encase all piping beneath structures.

2. Omit polyethylene encasement on concrete encased pipes.

3.08 PIPING SPECIFICATION SHEET—PIPESPEC – SYSTEM 19

A. Piping Symbol/Service

1. FTH – Froth

2. FTH - Frothing

3. POL - Polymer

B. Test Requirements

1. Medium: Water

2. Pressure: 150 psig

3. Duration: 120 minutes

C. Gasket Requirements

1. Flange: PTFE bonded EPDM, full-face gaskets, ANSI B16.1, Garlock, Gylon 3504, or equal

2. Push-on/Mech Cpl: N/A

D. Exposed Pipe and Valves: (See drawings for pipe size and valve type.)

1. Pipe: FTH and POL (All sizes)

a. PVC; ASTM D1784, Class 12454-B, NSF certified, ASTM D1785, Sch. 80.

b. Pipe and fittings exposed: Painted. Ref. Section 15145.

c. Conn; plain end, solvent weld, flanged for valves 3” and larger.

d. Ftgs; PVC, Sch. 80, solvent weld.

2. Valves (4” and less): (Unless otherwise shown on Contract Drawings)

a. Ball

1) FTH and POL service: PVC body, Chemtrol Tru Bloc TU Series, Asahi/America DuoBloc TU Series, GSR TU Series, or equal, with Teflon seats and EPDM O-rings. (See Remark 1.)

2) PAS service: Passivated Type 316 SS flanged with vented ball; Apollo 87A, Nibco F-510-S6-R-66-FS, or approved equal.

E. Buried Pipe and Valves: (See drawings for pipe size and valve type.)

1. (All sizes) Pipe

a. PVC; same as exposed. Provide plastic and magnetic tracer tape.

b. Conn; same as exposed.

c. Ftgs; same as exposed.

2. (2” and less)

a. Valves: Ball; same as exposed with extension stem and valve box.

3. (2 1/2” and larger)

a. Valves: Diaphragm; same as exposed with extension stem and valve box.

4. PAS service: not applicable

F. Unless otherwise specified, all exposed Frothing piping shall be heat traced with self-regulating Tyco Thermal Controls Raychem 5BTV1-CT, Chromalox, Thermo, or equal. All heat traced pipe shall be insulated with ½ inch thick Accessible Products model 351, prejacketed techlite foam insulation or equal.

END OF SECTION

SECTION 15060

PIPE HANGERS AND SUPPORTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Hangers and supports for all piping systems specified in Sections 15050.

B. This section does not include pipe supports for fire sprinkler systems, pipe anchors, guides or seismic restraints.

C. For seismic restraint requirements for piping, see Section 15097.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this section

1. Section 01330 – Submittals
2. Section 01612 – Seismic Design Requirements
3. Section 05500 – Miscellaneous Metals
4. Section 15050 – Piping Systems
5. Section 15097 – Seismic Restraints for Piping
6. Section 15250 – Insulation for Exposed Piping and Equipment

1.03 QUALITY CONTROL

A. Operating Conditions

1. The hangers and supports specified in this section are provided to resist pipe loads occurring primarily in the downward (gravity) direction. For the purpose of pipe hanger and support selection, this section establishes pipe support classifications based on the operating temperatures of the piping contents. Pipe support classifications are as follows:

a. Hot Systems: A. 120°F to 450°F.

b. Ambient Systems: B. 60°F to 119°F.

c. Cold Systems: C-1. 33°F to 59° F, C-2. -20°F to 32°F.

B. Hanger and Support Selection

1. Select pipe hangers and supports as specified. Base selections upon the pipe support classifications specified in this section, the piping insulation thickness specified in Section 15250, and any special requirements which may be specified in the contract documents.

2. Review the piping layout in relation to the surrounding structure and adjacent piping and equipment before selecting the type of support to be used at each hanger point.

3. Design and select hangers and supports to withstand all static and specified dynamic conditions of loading to which the piping and associated equipment may be subjected. As a minimum, consider the following conditions:

a. Weights of pipe, valves, fittings, insulating materials, suspended hanger components, and normal fluid contents.

b. Weight of hydrostatic test fluid or cleaning fluid if normal operating fluid contents are lighter.

c. Reaction forces due to the operation of safety or relief valves.

d. Wind, snow, or ice loadings on outdoor piping.

4. Size hangers and supports to fit the outside diameter of pipe, tubing, or, where specified, the outside diameter of insulation.

5. Where negligible movement occurs at hanger locations, use rod hangers for suspended lines, wherever practical. For piping supported from below, use bases, brackets or structural cross members.

6. For the suspension of size 2-1/2" and larger pipe and tubing, use hangers capable of vertical hanger component adjustment under load.

7. Provide supporting systems which provide for and control the free or intended movement of the piping including its movement in relation to that of connected equipment.

8. Where there is horizontal movement at a suspended hanger location, select hanger components to allow for swing. Do not permit the vertical angle of the hanger rod to exceed 4º at any time.

9. Do not permit contact between a pipe and hanger or support component, constructed of dissimilar metals. Prevent contact between dissimilar metals when supporting copper tubing by using copper-plated, rubber, plastic or vinyl coated, or stainless steel hanger and support components.

10. Unless otherwise specified, existing pipes and supports shall not be used to support new piping.

11. Unless otherwise specified, pipe support components shall not be attached to pressure vessels.

12. Stock hanger and support components shall be used wherever practical.

1.04 INDUSTRY STANDARDS

A. This section contains references to the following documents. They are a part of this section as specified and modified. In case of conflict between this section and the listed documents, the requirements of this section shall prevail.

B. Unless otherwise specified, references to documents shall mean the documents in effect at the time of Advertisement for Bids or Invitation to Bid (or on the effective date of the Agreement if there were no Bids).

C. If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by the organization or, if there are no replacement documents, the last version of the document before it was discontinued.

D. Where document dates are given in the following listing, reference to those documents shall mean the specific document version associated with that date, whether or not the document has been superseded by a version with a later date, discontinued, or replaced.

Reference	Title
AISC Manual of Steel Construction	American Institute of Steel Construction, Manual of Steel Construction, - 13th Edition
CBC	California Building Code
FEDSPEC WW-H-171e	Hangers and Supports, Pipe

Reference	Title
MFMA-4	Metal Framing Manufacturer's Association, Metal Framing Standards Publication
MSS SP-58	Manufacturers Standardization Society Pipe Hangers and Supports—Materials, Design and Manufacture
MSS SP-69	Manufacturers Standardization Society Pipe Hangers and Supports—Selection and Application

1.05 SUBMITTALS

A. Provide hanger and support locations, load calculations, and manufacturer layout and detail drawings as part of the submittals for equipment and piping coordination and installation drawings required in Section 15050.

B. The load and support design calculations shall be stamped and signed by a licensed Civil or Structural Engineer in the State of California. Comply with Section 01612 and 05500. Coordinate calculations with those required by Section 15097.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. B-Line

B. Carpenter & Paterson

C. Kin-Line

D. Anvil International

E. Michigan

F. Pipe Shields Incorporated

G. Superstrut

H. Unistrut

I. Or equal as specified in Section 01330

J. Comply with MSS SP-69 and FEDSPEC WW-H-171e for pipe support components and MFMA-4 for framing systems

2.02 PRODUCTS

A. Material

1. Pipe hangers and supports, structural attachments, rack and trapeze supports, fittings and accessories: 316 stainless steel.

2. Nuts, bolts, washers, and other fasteners: Type 316 stainless steel.

3. Safety end caps on all framing channels.

4. Comply with MSS SP-58 for supports and MFMA-4 for framing systems.

B. Pipe Hangers and Supports

1. Type 1 – Clevis Pipe Hanger, configuration and components equivalent to MSS and FEDSPEC Type 1.

a. Steel pipe (insulated): B-Line B3100, Anvil International 260, or equal, with insulation shield.

b. Steel pipe (uninsulated): B-Line B3100, Anvil International 260, or equal.

c. Cast and ductile iron pipe: B-Line B3102, Anvil International 590, or equal.

d. Copper pipe (uninsulated): B-Line B3104 CT, Anvil International CT-65, or equal.

e. Copper pipe (insulated): B-Line B3100, Anvil International 260, or equal, with insulation shield.

f. Plastic pipe: B-Line B3100 C, Carpenter & Paterson Fig. 100PVC, or equal.

2. Type 2 – J Pipe Hanger, configuration and components equivalent to MSS Type 5

a. Steel pipe: B-Line B3690, Anvil International 67, Michigan model 418, or equal.

b. Copper and plastic pipe: Michigan model 419, Unistrut J 1205N series, or equal.

3. Type 3 – Double Bolt Pipe Clamp, configuration and components equivalent to MSS and FEDSPEC Type 3.

a. Steel pipe (insulated): B-Line B3144, Anvil International 295, or equal, with insulation shield. Insulation shield is optional for hot and ambient systems.

b. Steel pipe (uninsulated): B-Line B3144, Anvil International 295, or equal.

c. Copper pipe (insulated only): B-Line B3144, Anvil International 295, or equal, with insulation shield.

4. Type 4 – Adjustable Roller Hanger, configuration and components equivalent to MSS Type 43 and FEDSPEC Type 44.

a. Steel pipe (insulated): B-Line B3110, Anvil International 181, or equal, with insulation shield.

b. Steel pipe (uninsulated): B-Line B3110, Anvil International 181, or equal.

c. Copper pipe (insulated only): B-Line B3110, Anvil International 181, or equal, with insulation shield.

d. Plastic pipe: B-Line B3110, Anvil International 181, or equal.

5. Type 5 – Single Pipe Roll, configuration and components shall be equivalent to MSS Type 41 and FEDSPEC Type 42.

a. Steel pipe (insulated): B-Line B3114, Anvil International 171, or equal, with insulation shield.

b. Steel pipe (uninsulated): B-Line B3114, Anvil International 171, or equal.

c. Plastic pipe: B-Line B3114, Anvil International 171, or equal.

6. Type 6 – Framing Channel Pipe Clamp

a. Steel pipe (uninsulated):

1) Pipe size 3/8” and 1/2”: 16-gage;

2) 3/4” through 1 1/4”: 14 gage;

3) 1-1/2” through 3”: 12-gage;

4) 3 1/2” through 5”: 11- gage;

5) 6 and 8”: 10-gage;

b. Michigan Model 431, Powerstrut PS 1100, Unistrut P 1109 series, or equal.

c. Steel pipe (insulated): Pipe clamp as described in Paragraph 2.02 B.6.a with insulation shield.

d. Copper (uninsulated) and plastic pipe:
   1) Pipe size 3/8” and 1”: 16-gage;
   2) 1-1/4” and 1-1/2”: 14-gage;
   3) 2” through 3”: 12-gage;
   4) 4”: 11-gage;
   5) Clamp: copper-plated, plastic coated or lined with dielectric material;
   6) Michigan model 432, Powerstrut PS 1200, Unistrut P 2024C and P 2024PC series, or equal.

e. Copper pipe (insulated): Pipe clamp shall be as described in Paragraph 2.02 B.6.a with insulation shield.

7. Type 7 – U-Bolt Configuration equivalent to MSS and FEDSPEC Type 24.
   a. Steel pipe (uninsulated): Anvil International. 137, B-Line B3188, or equal.
   b. Steel pipe (insulated): Anvil International. 137, B-Line B3188, or equal, with insulation shield.
   c. Cast and ductile iron pipe: Anvil International. 137, B-Line B3188, or equal.
   d. Copper pipe (uninsulated): Carpenter & Paterson Fig. 222 CT, B-Line B3501 CT, Anvil International. 137C, or equal.
   e. Copper pipe (insulated): Anvil International. 137, B-Line B3188, or equal, with insulation shield.
   f. Plastic pipe: Anvil International. 137C, Michigan model 151, B-Line B3188 C, or equal.

8. Type 8 – Adjustable Pipe Roll Support
   a. Steel pipe (insulated): B-Line B3122, Anvil International. 177, or equal, with insulation shield.
   b. Steel pipe (uninsulated): B-Line B3122, Anvil International. 177, or equal.
   c. Copper pipe (insulated only): B-Line B3122, Anvil International. 177, or equal, with insulation shield.
   d. Plastic pipe: B-Line B3122, Anvil International. 177, or equal.

9. Type 9 – Welded Pipe Stanchion
   a. Minimum material thickness: standard schedule pipe, cut to match contour of the pipe elbow.
   b. Limit use of this support to ambient systems only.

10. Type 10 – Pipe Stanchion Saddle and Yoke, comply with MSS Type 37 and FEDSPEC Type 38.
   a. Steel pipe (insulated): Carpenter & Paterson Fig. 125, B-Line B3090, or equal, with insulation shield.
   b. Steel pipe (uninsulated): Carpenter & Paterson Fig. 125, B-Line B3090, or equal.
   c. Cast and ductile iron pipe: Carpenter & Paterson Fig. 125, B-Line B3090 NS, or equal.
   d. Copper pipe (uninsulated): Carpenter & Paterson Fig. 125, B-Line B3090, or equal, with insulation shield or lined with dielectric material.
   e. Copper pipe (insulated): Carpenter & Paterson Fig. 125, B-Line B3090, or equal, with insulation shield.
   f. Plastic pipe: Carpenter & Paterson Fig. 125, B-Line B3090, or equal.

11. Type 11 – Offset Pipe Clamp, Provided with configuration and components specified using standard designs offered by a pipe hanger component manufacturer.

    a. Steel pipe (insulated): B-Line B3148, Anvil International 103, or equal, with insulation shield.

    b. Steel pipe (uninsulated): B-Line B3148, Anvil International 103, or equal.

    c. Cast and ductile iron pipe: B-Line B3148 NS, Anvil International 103, or equal.

    d. Copper pipe (insulated): B-Line B3148, Anvil International. 103, or equal, with insulation shield.

    e. Copper pipe (uninsulated): B-Line B3148, Anvil International. 103, or equal, lined with dielectric material.

    f. Plastic pipe: B-Line B3148, Anvil International. 103, or equal.

    g. Vertical pipe support applications: as specified above except do not use insulation shields for insulated pipe.

12. Type 12 – Riser Clamp, configuration and components equivalent to MSS and FEDSPEC Type 8.

    a. Steel pipe (insulated): B-Line B3373, Anvil International 261, or equal.

    b. Steel pipe (uninsulated): B-Line B3373, Anvil International 261, or equal.

    c. Cast and ductile iron pipe: B-Line B3373, Anvil International 261, or equal.

    d. Copper pipe (insulated): B-Line B3373 CT, Anvil International CT-121, Michigan model 511, or equal.

    e. Copper pipe (uninsulated): B-Line B3373 CT, Anvil International CT-121, Michigan model 511, or equal.

    f. Plastic pipe: B-Line B3373, Anvil International. 261c, or equal.

13. Type 13 – Framing Channel Pipe Strap, configuration equivalent to MSS Type 26.

    a. Steel pipe (uninsulated): Superstrut No. C-708-U, Powerstrut PS 3126, Kin-Line No. 477, or equal.

    b. Steel pipe (insulated): Superstrut No. C-708-U, Powerstrut PS 3126, Kin-Line No. 477, or equal, with insulation shield.

    c. Copper pipe (uninsulated): Superstrut No. C-708-U, Powerstrut PS 3126, Kin-Line No. 477, or equal, with insulation shield or lined with dielectric material.

    d. Copper pipe (insulated): Superstrut No. C-708-U, Powerstrut PS 3126, Kin-Line No. 477, or equal, with insulation shield.

    e. Plastic pipe: Superstrut No. C-708-U, Powerstrut PS 3126, Kin-Line No. 477, or equal.

C. Rack and Trapeze Supports

1. General

    a. Unless otherwise specified, provide trapeze and pipe rack components minimum thickness of 12 gage, with a maximum deflection 1/240 of the span.

2. Type 20 – Trapeze Pipe Support

    a. For trapeze pipe support cross members, use framing channel as specified in Paragraph 2.02 E.5. For flat plate fittings, 1-5/8” square standard design manufactured by framing channel manufacturer, Unistrut P2471, B-Line B202-2, or equal.

3. Type 21 – Pipe Rack Support

   a. For post and cross members, use framing channel as specified in Paragraph 2.02 E.5. For pipe rack fittings, use standard design manufactured by framing channel manufacturer. For 90º fittings, use gusseted Unistrut P2484, B-Line B844, or equal. Provide post base fittings as specified in Paragraph 2.02 D.5.

D. Structural Attachments

1. Type A –Insert for Concrete:

   a. Concrete inserts: Comply with MSS and FEDSPEC Type 18.

   b. Anvil International 282, Carpenter & Paterson Fig. 108, or equal.

2. Type B – Side Beam Bracket

   a. Comply with MSS Type 34 and FEDSPEC Type 35.

   b. Anvil International. 202, B-Line B3062, or equal.

3. Type C –Beam Clamp with Extension Piece

   a. Comply with MSS and FEDSPEC Type 30.

   b. Anvil International. 218 with Fig. 157 extension piece, B-Line B3054, or equal.

4. Type D – Beam Clamp with Eye Nut

   a. Beam clamp and eye nut: forged stainless steel.

   b. For configuration and components, comply with MSS and FEDSPEC Type 28.

   c. Anvil International. 292, Carpenter & Paterson Fig. 297, or equal.

5. Type E – Framing Channel Post Base

   a. Standard design offered by framing channel manufacturer.

   b. Single channel: Unistrut P2072A, B-Line B280, or equal.

   c. Double channel: Unistrut P2073A, B-Line B281, or equal.

6. Type F – Welded Beam Attachment

   a. Comply with MSS and FEDSPEC Type 22. B-Line B3083, Anvil International. 66, or equal.

7. Type G – Welded Steel Bracket

   a. Comply with MSS Type 32 and FEDSPEC Type 33 for medium welded bracket.

   b. Comply with MSS Type 33 and FEDSPEC Type 34 for heavy welded bracket.

8. Type H –Bracket

   a. Carpenter & Paterson Fig. 340, or equal.

9. Type J – Adjustable Beam Attachment

   a. Carpenter & Paterson Fig. 151, B-Line B3082, or equal.

10. Type K – Double Channel Bracket

   a. Wall channel: single channel framing channel as specified in Paragraph 2.02 E.5.

   b. Cantilever bracket: double framing channel assembly, Unistrut P2542 through P2546, B-Line B297-12 through B297-36, or equal.

11. Type L – Single Channel Bracket

a. Wall channel: single channel framing channel as specified in Paragraph 2.02 E.5.

b. Cantilever bracket: a single framing channel assembly, Unistrut P2231 through P2234, B-Line B198-6, B198-12, B196-18 and B196-24, or equal.

12. Type M – Wall Mounted Channel

a. Wall channel: single channel framing channel as specified in Paragraph 2.02 E.5.

13. Type N – Pipe Stanchion Floor Attachment

a. Base plate: 1/2” minimum thickness.

b. Make anchor bolt holes 1/16” larger than the anchor bolt diameter.

c. Fill space between the base plate and the floor with nonshrink grout.

E. Accessories

1. Hanger Rods

a. Rods: threaded on both ends or continuous threaded and sized as specified.

2. Weldless Eye Nut

a. Eye nut: forged stainless steel and complying with MSS and FEDSPEC Type 17.

b. Manufacturer: Anvil International. 290, B-Line B3200, or equal.

3. Welded Eye Rod

a. Weld-eye rod closed. Make inside diameter of eye a bolt diameter 1/8” larger than the rod diameter.

b. Manufacturer: Anvil International. 278, B-Line B3211, or equal.

4. Turnbuckle

a. Turnbuckle: forged stainless steel and complying with MSS and FEDSPEC Type 13.

b. Manufacturer: Anvil International. 230, B-Line B3202, or equal.

5. Framing Channel

a. Framing channel: 1-5/8” square, roll formed, 12-gage.

b. Provide channel with a continuous slot along one side with in-turned clamping ridges.

c. Single channel: Unistrut P1000, B-Line B22, or equal.

d. Double channel: Unistrut P1001, B-Line B22A, or equal.

e. Triple channel: Unistrut P1004A, B-Line B22X, or equal.

2.03 THERMAL PIPE HANGER SHIELD

A. Provide thermal shields at hanger, support, and guide locations on pipe requiring insulation.

B. The shield shall consist of an insulation layer encircling the entire circumference of the pipe and a steel jacket encircling the insulation layer.

C. Make the thermal shield the same thickness as the piping system insulation specified in Section 15250.

D. Use the standard shield for hot systems and the vapor barrier shield for cold systems.

E. Use stainless steel band clamps where specified to ensure against slippage between the pipe wall and the thermal shield.

F. Standard Shield

1. Insulation

a. Hydrous calcium silicate, high density, waterproof.

b. Compressive strength: 100 psi average.

c. Flexural strength: 75 psi average.

d. K factor: 0.38 at 100ºF mean.

e. Temperature range: 20ºF to 500ºF.

2. Steel Jacket

a. Stainless steel. Manufacturer's standard gauge supplied for the given pipe size.

3. Connection

a. Butt connect to pipe insulation. Install with steel jacket and insulation flush with end.

G. Vapor Barrier Shield:

1. Insulation

a. Hydrous calcium silicate, high density, waterproof.

b. Compressive strength: 100 psi average.

c. Flexural strength: 75 psi average.

d. K factor: 0.38 at 100ºF mean.

e. Temperature range: 20ºF to 500ºF.

2. Steel Jacket

a. Stainless steel. Manufacturer's standard gauge supplied for the given pipe size.

3. Connection

a. Butt connect shield to pipe insulation.

b. Extend insulation 1" each side of steel jacket for vaportight connection to pipe insulation vapor barrier.

PART 3 - EXECUTION

3.01 HANGER AND SUPPORT LOCATIONS

A. Locate hangers and supports as near as possible to concentrated loads such as valves, flanges, etc.

B. Locate hangers, supports and accessories within the maximum span lengths specified in the contract documents to support continuous pipeline runs unaffected by concentrated loads. Indicate hanger and support locations and components on the piping layout drawings required by Paragraph 1.05. For pipe support submittals, provide a complete cross reference of each support by mark number, including the page number on which each mark number can be found. Set up the cross reference to permit review from the mark numbers to the drawings, not the other way around.

C. Locate at least one hanger or support within 2' from a pipe change in direction.

D. Locate hangers and supports to ensure that connections to equipment, tanks, etc., are substantially free from loads transmitted by the piping.

E. Where piping is connected to equipment, a valve, piping assembly, etc., that will require removal for maintenance, support piping so temporary supports are not necessary.

F. Locate pipe supports to prevent "pockets" from forming in pipe between supports due to excessive deflection under load from weight of pipe, medium in the pipe, insulation, valves and fittings.

3.02 INSTALLATION

A. Construct welded and bolted attachments to the building structural steel which comply with the AISC Manual of Steel Construction. Unless otherwise specified, do not drill or burn holes in the building structural steel.

B. Do not use hanger components for purposes other than for which they were designed. Do not use components for rigging and erection purposes.

C. Install items to be embedded before concrete is poured. Fasten embedded items securely to prevent movement when concrete is poured.

D. Use embedded anchor bolts that satisfy the 2010 CBC provisions instead of concrete inserts for supports in areas below water surface or normally subject to submergence.

E. Install thermal pipe hanger shields on insulated piping at required locations during hanger and support installation. Make butt joint connections to pipe insulation at the time of insulation installation per manufacturer’s recommendations.

F. When hanger and support components are in contact with plastic pipe, make sure the components are free of burrs and sharp edges.

G. Ensure rollers roll freely without binding.

H. Roughen finished floor to a 1/4 inch amplitude beneath structural attachments and framing channel post bases prior to grouting. Place grout, free of voids and foreign material, between base plate and floor.

I. Cut and drill base plates to specified dimensions prior to welding stanchions or other attachments and prior to setting anchor bolts.

J. Provide plastic or rubber end caps at the exposed ends of all framing channels that are located up to 7’ above the floor.

3.03 ADJUSTMENTS

A. Adjust hangers and supports to obtain required pipe slope and elevation.

B. Use shims made of material that is compatible with the piping material.

C. Adjust stanchions prior to grouting their base plates.

END OF SECTION

SECTION 15076

PIPING AND VALVE IDENTIFICATION SYSTEMS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Identification systems for buried and exposed piping and valves.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 01330 – Submittals
2. Section 09960 – High Performance Coatings
3. Section 15050 – Piping Systems

1.03 SUBMITTALS

A. Comply with Section 01330.

B. Include the following items:

1. Manufacturer's catalog information demonstrating compliance with the materials requirements of this Section.
2. Samples of the materials to be used for piping and valve identification.
3. A schedule of piping services and description of identification systems.

PART 2 - PRODUCTS

2.01 PIPE CODING MARKERS

A. Manufacturers

1. One of the following or equal:
   a. Brady Company.
   b. Seton Name Plate Corporation.
   c. Industrial Safety Supply Corporation.

B. Comply with ANSI A13.1.

C. Type

1. Mechanically attached type that is easily removable.
2. Do not use adhesive applied type.
3. Pressure sensitive legends applied to plastic backing which is strapped or otherwise mechanically attached to the pipe.

D. Legend and Backing

1. Resistant to petroleum based oils and grease.
2. Meet criteria for humidity, solar radiation, rain, salt, fog and leakage fungus, as specified by MIL-STD-810C.

E. Withstand a continuous operating temperature range of -40ºF to 180ºF.

F. Manufactured and applied in one continuous length of plastic. Do not provide individual letter type.

G. Provide in the following letter heights: For markers bearing the legends on the background colors specified in Section 15050 (PIPESPEC).

Outside pipe diameter,[(a)] inches	Letter height, inches
Less than 1-1/2	1/2
1-1/2 through 3	1 1/8
Greater than 3	2-1/4
[(a)] Outside pipe diameter shall include insulation and jacketing.	

H. Include uni- and bi-directional arrows in the same sizes as the legend. Provide legends and arrows in white on blue or red backgrounds, and black on other specified backgrounds.

2.02 PLASTIC TRACER TAPE

A. Manufacturers

1. One of the following or equal:

a. Brady Company.

b. Seton Name Plate Corporation.

c. Industrial Safety Supply Corporation.

B. 6” wide, colored the same as the background colors as specified in Section 15050.

C. Material: inert plastic material suitable for direct burial.

D. Capable of stretching to twice its original length.

E. Print two messages on the tape, both messages at maximum intervals of 2 feet.

1. First message: **“CAUTION CAUTION CAUTION PIPE BURIED BELOW”** with bold letters approximately 2” high.

2. Second message:

a. The blank in the first message shall contain the words **“NON-POTABLE WATER”** when used for W2 and IRR piping.

b. The blank in the first message shall contain the words **“RECLAIMED WASTEWATER”** when used for W3 piping.

c. The blank in the first message shall contain the words **“STORM DRAIN”** when used for SD piping.

d. The blank in the first message shall contain the word **“SEWER”** for all other piping systems.

2.03 MAGNETIC TRACER TAPE

A. Manufacturers

1. One of the following or equal:

a. Brady Co.

b. Seton Name Plate Corporation

c. Industrial Safety Supply Corporation.

B. Material

1. Acid and alkali-resistant polyethylene.
2. 3” wide.
3. 0.005” thick.
4. 1,500 psi strength and 140% elongation value.

C. Color the same as the background colors as specified in Section 15050 and inscribe with the words **“CAUTION—PIPE BURIED BELOW”.**

2.04 VALVE IDENTIFICATION

A. Fabricate of stainless steel and inscribed with the specified valve number stamped in 1/4” high letters.

B. The label shall be of 1/16-inch thick stainless steel with a minimum size of 2 inches.

C. See Drawings for valve designation system.

PART 3 - EXECUTION

3.01 PIPING IDENTIFICATION

A. Pipe Coding

1. After application of the specified coating and insulation systems to new or existing piping, as specified in Section 09960, identify exposed piping, interior and exterior, and piping in ceiling spaces, pipe trenches, pipe chases and valve boxes identified with plastic markers.
2. Locate legend markers and directional arrows at each side of walls, floors and ceilings, at one side of each piece of equipment, at piping intersections, and at approximately 50’ centers.

B. Plastic Tracer Tape

1. Provide a single line of plastic tracer tape as specified in this Section, 2.5 feet above the centerline of each buried pipe.
2. Spread tape flat with message side up before backfilling.

C. Polyethylene Magnetic Tracer Tape

1. Install 12-18” below ground and parallel to all buried pipes.

3.02 VALVE IDENTIFICATION

A. Label all valves designated with a valve number where valve numbers are indicated on the Drawings.

B. Each label shall be permanently attached to the valve using stainless steel screws, stainless steel wire and connectors, or another method subject to approval.

C. Install tags on valve flanges in a position visible from floor level.

D. For flangeless valves 8” in diameter and larger, attach tags to the valve body by self-tapping corrosion resistant metal screws.

E. For flangeless valves 6” in diameter and smaller, attach tags to the valve stem by stainless steel wire. Use 0.063” wire minimum.

END OF SECTION

SECTION 15095

PIPING APPURTENANCES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Level gauges and pressure gauges.

B. Exclusions

1. Temperature, pressure, and flow measuring devices used for instrumentation are specified in Division 16.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 01330 – Submittals

1.03 SUBMITTALS

A. Comply with Section 01330.

PART 2 - PRODUCTS

2.01 PRESSURE DEVICES

A. Analog dial-type pressure gauges and accessories to be furnished and installed at the locations indicated on the drawings and in the Gauge Schedule included herein.

B. Provide in accordance with the schedule, whether or not indicated in the drawings.

C. Gauges to be furnished by an equipment supplier, either with an item of equipment or as a component of an equipment package, are covered in the applicable equipment section.

D. Gauge piping and fittings:

1. Tubing

a. Material:

1) ASTM A269, Grade TP 316, annealed, max hardness Rockwell B80

b. Min wall thickness:

Tube OD, inches	Wall Thickness, inches
1/4 - 3/8	0.065
1/2 - 7/8	0.083
1 - 2	0.109

2. Fittings

a. Compression type

b. Material:

1) AISI Type 316 stainless steel.

c. Manufacturers:

1) Crawford “Swagelok”,

2) Parker Hannifin “CPI”, “Ferulok”,

3) or equal.

E. Pressure Gauges

1. Provide where shown on the Drawings and as specified. Contractor shall be responsible for all gauges shown on the drawings, even if a gauge is not scheduled herein.

2. Select so that the normal operating pressure falls between 50 and 80% of full scale.

3. Components

a. Face: 4-inch with white background and black markings, 270º movement, indicate units of measurement.

b. Accuracy: 1.0% accuracy, full scale.

c. Bottom stem mounting.

d. Type 316 stainless steel bourdon tube.

e. Case

1) 300 series stainless steel case, shatterproof glass, and a 1/2” NPT bottom connection.

2) For gauges installed outdoors, provide weather-proofed cases.

4. For air, gas, and low pressure services (0–10’), provide premium grade, heavy-duty bourdon-tube units (bellow type for vacuum) with Delrin bushings and pinion, and stainless steel sector.

5. For liquid service, comply with above, except provide with an internal pulsation dampening system consisting of either a glycerin fill or a silicone fluid fill. Do not use snubbers or orifices.

6. Manufacturers, one of the following or equal:

a. Ashcroft Duragauge Fig. 1009.

b. Ametek 1535.

F. Gauge Accessories:

1. Isolating Valves

a. Provide each gauge with an isolating, threaded-end eccentric plug valve. Furnish valve with Type 316 stainless steel body, plug, bearings and stem. Packing: Buna-N or PTFE. Manufacturers: Dezurik Model PEC, Clow or equal.

2. Gauge Isolators

a. Provide a suitable isolator shall be provided for each gauge, as indicated in the Gauge Schedule included herein, and for all gauges located on chemical lines and all gauges located on wastewater or other solids bearing liquids.

b. Unless otherwise specified, provide a diaphragm seal (DS).

1) Type: Thread-attached type with removable AISI Type 316 stainless steel diaphragm, zinc or cadmium plated carbon steel upper housing, and bronze lower housing.

2) Upper housing: Contour to fit. Provide a seat and seal for the diaphragm. Design to permit removal of the gauge with the system under pressure.

3) Lower housing: Provide with a tapped and plugged 1/4-inch NPT flushing connection.

c. Provide an inline, flow-thru, annular seal, flange type gauge isolator at the locations indicated on the drawings or in the Gauge Schedule included herein, designation AS.

1) Components: Carbon steel housing, carbon steel assembly flanges, and Buna-N flexible cylinder, filled with silicone oil.

2) Furnish suitable for installation between two flat faced ANSI B16.1, Class 125 cast iron pipe flanges, and tapped for a 1/2-inch NPT gauge connection.

d. Manufacturers, one of the following or equal:

1) Ronningen-Petter “Iso-Ring”.

2) Red Valve “Series 40 Flanged Sensor”.

e. Assemble, fill with a suitable fluid, and calibrate as a unit at the factory each isolator, diaphragm seal, and gauge served.

PART 3 - EXECUTION

3.01 INSTALLATION OF PRESSURE GAUGES

A. Install at the locations indicated on the drawings. Configure to the requirements indicated on the drawings and the Gauge Schedule located herein.

B. Unless otherwise specified herein, do not direct tap pipe walls for installation of gauge connections.

C. Install all gauges and diaphragm in the vertical upright position.

1. Use Teflon thread tape or Teflon thread sealer to assemble threaded connections.

2. Make all connections free from leaks.

D. Purge lines of trapped air at gauge location prior to installation of the gauge or diaphragm seal.

3.02 GAUGE TAPS

A. Provide on the suction and discharge of pumps, fans, compressors, vacuum pumps and blowers.

B. Type: 1/2” gauge valve attached by a threaded nipple to the pipeline, duct, or equipment.

END OF SECTION

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SECTION 15097

SEISMIC RESTRAINTS FOR PIPING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Seismic restraints for bracing all piping systems specified in Section 15050.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 01330 – Submittal Procedures
2. Section 01612 – Seismic Design Criteria
3. Section 05500 – Miscellaneous Metals
4. Section 15050 – Piping Systems

1.03 DEFINITIONS

A. Longitudinal Direction: Direction parallel to the pipe axis.

B. Lateral Direction: Direction perpendicular to the pipe axis.

1.04 OPERATING CONDITIONS

A. Provide seismic restraints, specified in this section, to resist pipe movements and loads occurring as a result of an earthquake or other seismic event.

B. Unless otherwise specified, brace all piping to resist seismic loading caused by forces applied at the individual pipe's center of gravity. For seismic loading see Section 01612.

1.05 RESTRAINT SELECTION

A. Unless otherwise specified, select, locate and provide seismic restraints for piping in accordance with the contract documents.

B. Review the piping layout in relation to the surrounding structure and adjacent piping and equipment before selecting the restraint to be used at each point.

C. Seismic restraints may be omitted from the following installations:

1. Gas piping less than 1" inside diameter.
2. Piping in boiler and mechanical rooms less than 1-1/4" inside diameter.
3. All other piping less than 2-1/2" inside diameter.
4. All piping suspended by individual hangers 12" or less in length from the top of the pipe to the bottom of the support for the hanger.

D. Do not brace piping systems to dissimilar parts of a building or to dissimilar building systems that may respond in a different mode during an earthquake. Examples: wall and a roof; solid concrete wall and a metal deck with lightweight concrete fill.

E. Size restraints to fit the outside diameter of the pipe, tubing, or, where specified, the outside diameter of insulation.

F. Do not permit contact between a pipe and restraint component of dissimilar metals. Prevent contact between dissimilar metals when restraining copper tubing by the use of copper-plated, rubber, plastic or vinyl coated, or stainless steel restraint components.

G. Do not use branch lines to brace main lines.

H. Do not permit seismic bracing to limit the expansion and contraction of the piping system.

1.06 SUBMITTALS

A. Provide seismic restraint locations, load calculations, and manufacturer's drawings as specified in Paragraph 3.01 as part of the submittals for equipment and piping coordination and installation drawings required in Section 15050.

B. Provide seismic restraint load calculations for each seismically restrained pipe system prepared and signed by a civil or structural engineer currently registered in the State of California. See Section 01612 for seismic loading required.

PART 2 - MANUFACTURERS

2.01 MANUFACTURERS

A. Carpenter & Patterson.

B. B-Line.

C. Kin-Line.

D. Anvil International.

E. Michigan.

F. Pipe Shields Incorporated.

G. Superstrut.

H. Unistrut.

I. Or equal as specified in Section 01330.

2.02 PRODUCTS

A. Materials

1. Restraints, including braces and fittings, pipe and structural attachments, trapeze restraints, and accessories: Type 316 stainless steel.

2. Nuts, bolts and washers, fittings and accessories: Type 316 stainless steel.

3. Comply with MSS SP-58

B. Pipe Attachments

1. Type 1s - Clevis Restraint Attachment

a. Provide Type 1, clevis pipe hanger, as specified in Section 15060, 2.02.B.

2. Type 3s - Double Bolt Restraint Clamp:

a. Provide Type 3, double bolt pipe clamp, as specified in Section 15060, 2.02.B.

3. Type 4s - Roller Restraint Attachment

a. Provide Type 4, adjustable roller hanger, as specified in Section 15060, 2.02.B.

b. Size hold down strap as follows:

1) 1” through 2” Pipe: 1” by 1/8” thick
2) 2-1/2” through 4” Pipe: 1-1/4” by 3/l6” thick
3) 6” Pipe: 2” by 3/l6” thick
4) 8” Pipe: 2-1/2” by 3/16” thick
5) 10” through 16” Pipe: 2-1/2” by 1/4” thick
6) 20” Pipe: 3” by 1/4” thick
7) 24” Pipe: 3” by 3/8” thick.

4. TypeE 7s - U-Bolt Restraint

a. Provide Type 7, U-bolt, as specified in Paragraph 15060, 2.02.B.

5. Type 13s - Framing Channel Strap Restraint

a. Provide Type 13, framing channel pipe strap, as specified in Paragraph 15060, 2.02.B.

6. Type 14s - Pipe Clamp Restraint

a. Provide with configuration and components equivalent to MSS and FEDSPEC Type 4.

b. Rod attachment and longitudinal brace connection stud shall be fabricated and welded by the manufacturer.

c. Steel pipe (insulated): Superstrut No. S-720, Kin-Line No. S475, or equal, with insulation shield.

d. Steel pipe (uninsulated): Superstrut No. S-720, Kin-Line No. S475, or equal.

e. Cast and ductile iron pipe: Superstrut No. S-720, Kin-Line No. S475, or equal.

f. Copper pipe (insulated): Superstrut No. S-720, Kin-Line No. S475, or equal, with insulation shield.

g. Copper pipe (uninsulated): Superstrut No. S-720, Kin-Line No. S475, or equal, with insulation shield or dielectric lining.

h. Plastic pipe: Superstrut No. S-720, Kin-Line No. S475, or equal.

C. Trapeze Restraints

1. General

a. Unless otherwise specified, provide trapeze members with a minimum steel thickness of 12-gage, with a maximum deflection 1/240 of the span.

2. Type 20s - Single Channel Lateral Restraint

a. Trapeze restraint cross member

1) 1-5/8” square framing channel, Unistrut P1000, B-Line B22, Superstrut A-1200, or equal.

b. Pipe attachments

1) Type 13s or Type 7s specified in Paragraph 2.02.B.

c. Rod stiffeners and lateral brace

1) As specified in Paragraph 2.02.D.

3. Type 21s - Double Channel Lateral Restraint

a. Trapeze restraint cross member

1) a double channel manufactured assembly such as Unistrut P1001, B-Line B22A, Superstrut A-1202, or equal.

2) Pipe attachments

a) Type 13s or Type 7s specified in Paragraph 2.02.B.

b. Rod stiffeners and lateral brace

1) As specified in Paragraph 2.02.D.

4. Type 22s - Double Channel Longitudinal Restraint

a. Trapeze restraint cross member: a double channel manufactured assembly such as Unistrut P1001, B-Line B22A, Superstrut A-1202, or equal.

b. Pipe attachments

1) Type 13s or Type 7s specified in Paragraph 2.02.B.

c. Rod stiffeners, longitudinal and lateral braces

1) As specified in Paragraph 2.02.D.

D. Braces and Fittings

1. Seismic Brace Fitting

a. Provided for use with industry standard framing channel.

b. Provide welded construction, two-piece linked fitting.

c. Provide means to reduce noise and vibration transmission between the linked fitting parts.

d. Manufacturers

1) Superstrut C-749N series seismic brace,

2) Kin-Line No. 633 seismic connector fitting,

3) or equal as defined in Section 01330.

2. Hanger Rod Stiffener Assembly

a. Rod stiffener channel

1) 1-5/8” square framing channel, Unistrut P1000, B-Line B22, Superstrut A-1200, or equal.

b. Rod stiffener clamps, complete with channel nut

1) Superstrut ES-142, Kin-Line No. 635, or equal as defined in Section 01330.

3. Type A1 Seismic Brace

a. Provide 1-5/8” square framing channel, Unistrut P1000, B-Line B22, Superstrut A-1200, Kin-Line No. 4112, or equal as defined in Section 01330.

4. Type A2 Seismic Brace

a. Provide 1-5/8” wide by 3-3/4” deep framing channel, Unistrut P5000, B-Line B11, Superstrut H-1200, Kin-Line No. 8212, or equal as defined in Section 01330.

E. Structural Attachments

1. General

a. Unless otherwise specified, provide hanger rod structural attachments as specified in Section 15060.

b. Structural attachments for longitudinal and lateral seismic braces: as specified in Paragraph 2.02.D.

2. Type SA-1 Attachment

   a. Brace fitting: as specified in Paragraph 2.02.D.

   b. Concrete anchors

      1) As specified in Section 05500 with embedment and location dimensions as specified.

3. Type SA-2 Attachment

   a. Brace fitting: as specified in Paragraph 2.02.D.

   b. Concrete anchors

      1) As specified in Section 05500 with embedment and location dimensions as specified.

   c. Framing channel

      1) As specified in Paragraph 2.02.F.

4. Type SA-3 Attachment

   a. Brace fitting

      1) As specified in Paragraph 2.02.D.

   b. Cap screw, lockwasher and hex nut materials and finish: compatible with structural steel material.

5. Type SA-4 Attachment

   a. Brace fitting

      1) As specified in Paragraph 2.02.D.

6. Type SA-5 Attachment

   a. Brace fitting

      1) As specified in Paragraph 2.02.D.

      2) Angle: 4” x 3” x 3/8”.

F. Accessories

1. Hanger Rods

   a. Threaded on both ends or continuous threaded and sized as specified.

2. Framing Channel

   a. Roll formed, 12-gage.

   b. Provide channel with a continuous slot along one side with in-turned clamping ridges.

   c. Manufacturers

      1) Unistrut P1000 series,

      2) B-Line B22 series,

      3) Superstrut A-1200 series,

      4) or equal as specified in Section 01330.

3. Rod Coupling

   a. Provide with sight hole in center of coupling body.

   b. Manufacturers

      1) Anvil International. 135,

      2) Superstrut H-119,

      3) or equal as specified in Section 01330.

2.03 THERMAL PIPE HANGER SHIELD

A. Provide thermal shields at seismic restraint locations on pipe requiring insulation.

B. Provide thermal pipe hanger shields as specified in Section 15060, 2.03.

C. Provide Type 316 stainless steel band clamps on thermal shields at longitudinal pipe restraint locations.

PART 3 - EXECUTION

3.01 PIPE RESTRAINT LOCATIONS

A. Locate the first seismic restraint on a piping system not more than 10’ from the main riser, entrance to a building or piece of equipment.

B. Brace cast iron pipe on each side of a change in direction of 90º or more. Brace or stabilize joints in risers between floors.

C. Brace no-hub and bell and spigot cast iron soil pipe longitudinally every 20’ and laterally every 10’.

D. Lateral bracing for one pipe section may also act as longitudinal bracing for the pipe section connected perpendicular to it, if the bracing is installed within 24” of the elbow or tee of the same size.

E. Indicate seismic restraint locations and components on the piping layout drawings required by Section 15050.

F. Provide a legend giving load information and restraint component selection at each restraint location.

G. Provide seismic restraint load calculations conforming to the requirements specified in Paragraph 1.06.

3.02 INSTALLATION

A. Use rod stiffener assemblies at seismic restraints for hanger rods over 6” in length. Provide a minimum of two rod stiffener clamps on any rod stiffener assembly.

B. Install lateral and longitudinal bracing between 45º above and 45º below horizontal, inclusive, relative to the horizontal centerline of the pipe.

C. Construct welded and bolted attachments to the building structural steel which comply with the AISC Manual of Steel Construction. Do not drill or burn holes in the building structural steel without approval of the Construction Manager

D. Use embedded anchor bolts instead of concrete inserts for seismic brace installations in areas below water surface or normally subject to submerging.

E. Install thermal pipe hanger shields on insulated piping at required locations during restraint installation. Make butt joint connections to pipe insulation at the time of insulation installation per the manufacturer’s recommendations.

F. Provide restraint components in contact with plastic pipe which are free of burrs and sharp edges.

G. Ensure rollers roll freely without binding.

H. Provide plastic or rubber end caps at the exposed ends of all framing channels that are located up to 7’ above the floor.

END OF SECTION

SECTION 15110.5

VALVES AND APPURTENANCES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Miscellaneous valves and accessories for water service. Valves shall be installed in accordance with the manufacturer's recommendations. Valves shall be suitable for pressures up to 150 psi. Valves shall be complete with all necessary operating hand wheels, extension stems, valve boxes, floor stands, worm and gear operators, operating nuts, hardware and fasteners, and wrenches which are required for the proper completion of the work included under this section.

1.02 SECTION INCLUDES

A. The following Sections are referenced in this Section:

1. Section 01330 – Submittals
2. Section 09960 – High Performance Coatings

1.03 SUBMITTALS

A. Demonstrate full compliance with all aspects of this specification and submit in accordance with Section 01330.

1.04 REFERENCE STANDARDS

A. The standards listed below are part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

Reference	Title
AWWA C504	Rubber-Seated Butterfly Valves
AWWA C509	Resilient Seat Gate Valves for Water and Sewage Systems
AWWA C550	Protective Interior Coatings for Valves and Hydrants

PART 2 - PRODUCTS

2.01 GENERAL

A. Valves shall be furnished full line size unless specifically called out to be of reduced size. Unless otherwise specified, valves shall be rated for 150 psi working pressure minimum.

B. All valves shall be complete with all necessary operating hand wheels, chain wheels, extension stems, valve boxes, floor stands, worm and gear operators, operating nuts, chains, hardware and fasteners, and wrenches which are required for the proper completion of the work included under this section. Operating torque to operate any valve shall not exceed 40 ft-lb. Unless otherwise indicated, the direction of rotation of the wheel, wrench nut or lever to open the valve shall be counterclockwise. Each valve body or operator shall have cast thereon the word "OPEN" and an arrow indicating the direction to open. Actual length of valves shall be within 1/16 inch (plus or minus) of the specified or catalog length except where installed adjacent to flexible or mechanical pipe couplings, where different lengths of a replacement can be accommodated. Flanges shall meet the requirements of ANSI B16.

C. Valve boxes and extended stems to within 24 inches of finished grade shall be provided for all buried valves.

2.02 ACTUATORS

A. All valves, except those which are equipped with power actuators or are designed for automatic operations, shall be provided with manual actuators. Unless otherwise specified or indicated on the Plans, each manual actuator shall be equipped with an operating hand wheel. Manual operators for butterfly valves shall be designed in accordance with AWWA C504 and shall have a disc position indicator designating the opened and closed position of the valve.

B. Operators for butterfly valves six-inches in diameter and smaller shall be level actuators and permit locking the valves in at least five intermediate positions between fully open and fully closed. Operators for butterfly valves eight-inches in diameter and larger shall be the traveling nut type. Manual operators for exposed service valves shall include a handwheel and be of the traveling nut, rack and pinion, or worm gear type and be gasketed for weatherproof service. Operators shall be equipped with adjustable mechanical stop-limiting devices to prevent over-travel of the disc in the open and closed positions and shall be self-locking and designed to hold the valve in any intermediate position between full open and full closed. Valve operator components shall withstand an input torque of 300 ft-lbs at the extreme operator positions without damage.

C. Operators for buried service shall be provided with a two-inch square operating nut unless otherwise specified or shown. Operating extension stems shall be provided to bring the operating nut to a point six inches below the surface of the ground and box cover. Extension stems shall be constructed of steel and shall be complete with two-inch square operating nut.

D. Power actuators for valves shall be motorized actuators and shall be one of the following types:

1. For quarter-turn valves:

a. Open-close power actuators shall be Rotork IQT or approved equal. Power actuator shall be provided with four configurable indication contacts configured to indicate the following: remote selected (AUTO), internal failure (FAIL), fully closed (CLOSE), and fully opened (OPEN). Four additional configurable contacts shall be provided. Power actuator shall operate on 120VAC power and all contacts shall be rated 5A, 120VAC.

b. Modulating power actuators shall be Rotork IQTM or approved equal. Power actuator shall set its position based on a 4-20mA set point signal and provide a 4-20mA valve position feedback signal (4mA = 0% open, 20mA – 100% open). Power actuator shall be provided with four configurable indication contacts configured to indicate the following: remote selected (AUTO), internal failure (FAIL), fully closed (CLOSE), and fully opened (OPEN). Four additional configurable contacts shall be provided. Power actuator shall operate on 120VAC power and all contacts shall be rated 5A. 120VAC.

2. For multi-turn gate valves:

a. Open-close power actuators shall be Rotork IQS or approved equal. Power actuator shall be provided with four configurable indication contacts configured to indicate the following: remote selected (AUTO), internal failure (FAIL), fully closed (CLOSE), and fully opened (OPEN). Four additional configurable contacts shall be provided. Power actuator shall operate on 120VAC power and all contacts shall be rated 5A, 120VAC.

2.03 BUTTERFLY VALVES (NOT USED)

2.04 GATE VALVES (NOT USED)

2.05 PLUG VALVES

A. Cast iron or ductile iron body and plug, neoprene plug facing, stainless steel valve seat, Buna-N or PTFE stem packing, and Type 316 stainless steel plug bearing. Non-lubricated eccentric plug valve, suitable for drip-tight, bi-directional shutoff at 150 psi design pressure. Port area of at least 80 percent of the full pipe cross-sectional area. Bolts, Studs, Nuts and Washers: Zinc plated in exposed installations, Type 316 stainless steel in buried installations. Valve as manufactured by DeZurik, Clow Valve Company, or equal.

2.06 BALL VALVES

A. Unless otherwise indicated or specified, all 2-1/2-inch and smaller shutoff valves shall be ball valves.

B. Two-inch and smaller ball valves for general air and water service shall be of bronze or brass construction with two piece end entry body, with threaded ends, Teflon seats, and hand lever operators. Valves shall be rated not less than 500 psi non-shock cold WOG and shall be drip tight in both directions. Valves shall be Apollo 70-100 series, Stockham S-216, or equal.

2.07 HOSE VALVES

A. Hose valves shall be one and one/half -inch in size unless otherwise indicated on the Plans.

B. Valves shall be Class 125 angle valves with bronze body seat and disc equipped with hose nipple.

C. Hose nipple shall be all brass with double male ends, NPT by straight hose tread.

D. Provide valve with vacuum breaker/backflow preventer in chlorine room.

E. Valves shall be Stockham B-216, Walworth Fig 3059, or equal.

2.08 SILENT CHECK VALVES (NOT USED)

2.09 ELASTOMER TYPE CHECK VALVES (NOT USED)

2.10 SERVICE SADDLES

A. Double-strap design rated 150 psi minimum working pressure.

B. Run diameter compatible with outside diameter of the pipe on which the saddle is installed. Taps with iron pipe threads.

C. Malleable or ductile iron bodies and galvanized steel straps, steel hex nuts w/washers, and neoprene seals.

D. Manufacturers and Models: Smith-Blair, Inc., Series 313; Romac Industries, Inc., Series 202; or equal.

2.11 VALVE APPURTENANCES

A. Extension Stems for Buried Valve Operators

1. Where the depth of the valve is such that its centerline is more than three feet below grade, provide operating extension stems to bring the operating nut to a point six inches below the surface of the ground and/or box cover.

2. Extension stems shall be constructed of steel and be complete with two-inch square operating nut.

B. Valve Boxes

1. Provide valve boxes for all buried valves.

2. Valve boxes shall be concrete construction with a minimum throat diameter of nine inches and minimum wall thickness of one inch.

3. Valve boxes shall have cast-iron bases and covers with the appropriate service designation cast thereon. All parts shall be bituminous varnish coated.

4. Valve boxes shall be Christy Concrete Products No. G-5 or equal.

5. PVC pipe risers shall be C900 PVC, 8-inch diameter, extend to valve box and shall fit inside the valve box without slipping.

6. Tracer wire shall be placed outside the riser pipe.

2.12 AIR RELEASE VALVES (ARV)

A. Air release valves located at each pump shall be of the simple lever type, 1/2-inch inlet and outlet unless otherwise shown, designed to have a small 3/32-inch venting orifice to vent the accumulation of air and other gases that may occur within a pipeline while the pump is operating.

B. In closed position, valve to seat against resilient seat to prevent water leakage.

C. Body and cover, cast or ductile iron; float and trim, stainless steel; seat, Viton or Buna-N.

D. Provide return vent pipe turned 180 degrees downward and discharging to floor drain.

E. Provide isolation valves below each air valve.

F. Manufacturers and Products: APCO, Model 50; Val-Matic Valve, Model 22; or equal.

2.13 COMBINATION AIR VALVES (CAV)

A. Combination air valves for water service shall be single-body construction. Combination air valves shall have a small venting orifice to vent the accumulation of air and other gases with the line or system under pressure and shall have a large venting orifice to permit the release of air as the line is filling or relieve the vacuum as the line is draining or is under negative pressure.

B. Valve shall have a two-inch inlet and outlet unless otherwise shown and designed to have a small 3/32-inch venting orifice.

C. Body and cover, cast iron and ductile iron; float and trim, stainless steel; seat, Viton or Buna-N.

D. Provide return vent pipe turned 180 degrees downward. Isolation valves shall be provided below each air valve.

E. Manufacturers and Products: APCO Series 140/150; Val-Matic Valve, Model 202C; or equal.

2.14 FIRE HYDRANTS (NOT USED)

2.15 DOUBLE DOOR CHECK VALVES (NOT USED)

2.16 RUBBER FLAPPER CHECK VALVES (NOT USED)

PART 3 - EXECUTION

3.01 PLACING

A. Valves installed in vertical runs of pipe shall have their operating stems oriented to facilitate the most practicable operation, as approved by the Engineer.

3.02 ANCHOR BOLTS

A. Anchor bolts, nuts, and washers shall be Type 316 stainless steel and shall be cast in place during concrete placement. Threads shall be protected and shall be cleaned before the nuts are attached and tightened.

3.03 TESTING

A. Test valves at the same time that the adjacent pipeline is tested. Joints shall show no visible leakage under test. Repair joints that show signs of leakage prior to final acceptance. If there are any special parts of control systems or operators that might be damaged by the pipeline test, they shall be properly protected. The Contractor shall be held responsible for any damage caused by the testing.

B. If requested by the City, the valve manufacturer shall furnish an affidavit stating the materials options furnished, and/or that these and other referenced specifications have been complied with.

3.04 CORROSION CONTROL

A. Paint exposed valves in accordance with Section 09960.

B. All buried metal parts such as valves and bolt-ups not cement mortar coated shall be coated with two coats of bitumastic in accordance with Section 09960 and encased with one sheet of 8-mil minimum thickness polyethylene to form a continuous and all-encompassing layer of polyethylene between the protected metal and surrounding earth.

C. Secure all polyethylene in place with 10-mil polyethylene tape.

END OF SECTION

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SECTION 15115.1

ECCENTRIC PLUG VALVES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Non-lubricated eccentric plug valves.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section:

1. Section 01782 – Operation and Maintenance Information

1.03 UNIT RESPONSIBILITY

A. Plug valve manufacturer has unit responsibility for valve and actuator compatibility.

B. Responsibility of the manufacturer extends to the proper selection, assembly, factory testing, and furnishing of the specified products.

1.04 SUBMITTALS

A. Product Data: Submit Manufacturer's standard product data.

B. Applicable operating and maintenance information specified in Section 01782.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: One of the following or equal:

1. DeZurik, Model PEC.
2. Clow Valve Company, Model F-5412 (flanged) or F-5413 (mechanical joint).
3. Milliken, Model 600.

2.02 ECCENTRIC PLUG VALVES

A. General

1. Description: Non-lubricated, eccentric plug-type valve.
2. Suitable for drip-tight, bi-directional shutoff at the specified valve design pressure.
3. Comply with ANSI/AWWA C517, Resilient-Seated Cast Iron Eccentric Plug Valves.

B. Valve Design

1. Port Design

a. Rectangular shaped.

b. Port Area:

1) Valves less than or equal to 20-inches in nominal size: At least 80 percent of the full pipe cross-sectional area.

2) Valves greater than 20-inches in nominal size: At least 70 percent of the full pipe cross-sectional area.

2. Plug Design:

a. Geometry: Eccentrically shaped with a cylindrical seating surface that is offset from the center of the plug shaft.

b. Facing:

1) Encapsulate entire plug with resilient material.

2) Bond between Resilient Facing and Metal Plug: Capable of withstanding 75-pound pull in accordance with ASTM D429, Method B.

3. Valve Seats: Welded-in overlay of not less than 90 percent pure nickel to form a raised area at least 1/8-inch thick for contact with the plug facing. Machine seat after welding to provide a smooth surface.

4. Shaft Bearing and Bottom Bearing:

a. Provide replaceable bearings in the upper and lower shaft trunnions.

b. Design: Sleeve-type, permanently lubricated.

5. Shaft Seal: Chevron type packing seal, held in place with an adjustable gland follower. Valves using O-ring type shaft seals are not acceptable.

C. Valve Body Pressure Ratings

1. Valves 12 inches in nominal size and smaller: 175 psi.

2. Valves 14-inches through 36-inches in nominal size: 150 psi.

3. Valves 42-inches through 54-inches in nominal size: 125 psi.

D. End Connections

1. Valves 3 inches and Smaller: Threaded ends.

2. Valves Larger than 3 inches:

a. Exposed Piping Systems: Flanged end connections with flange dimensions, facing and drilling conforming to ANSI B16.1, Class 125.

b. Buried Piping Systems: Mechanical joint end connections conforming to ANSI A21.11/AWWA C606.

2.03 MATERIALS

A. Materials of Construction

1. Body: Cast iron, ASTM A126, Class B.

2. Plug: Cast iron, ASTM A126, Class B, or cast iron ASTM A436 (Ni-resist), or ductile iron, ASTM A536.

3. Plug Facing: Neoprene or Buna-N.

4. Body Seats:

a. Valves less than 3 inches in nominal size: Cast iron, ASTM A126, Class B.

b. Valves 3 inches in nominal size and larger: Stainless steel, ASTM A276, Type 304 or nickel.

5. Stem Packing: Buna-N or PTFE.

6. Plug Bearings: Type 316 stainless steel.

7. Bolts, Studs, Nuts and Washers: Zinc plated in exposed installations, Type 316 stainless steel in buried installations.

B. Shop Applied Interior and Exterior Coatings

1. Interior Surfaces: Apply two coats Ameron Amerlock 400, Kop Coat Carboline 890LT, or equal. Apply each coat to 4 to 5 mils thick.

2. Exterior Surfaces: Apply polyurethane coating system consisting of one coat primer, one intermediate coat of polyamide epoxy, and one final coat of polyurethane.

a. Primer and Intermediate Coats: Ameron Amerlock 400, Kop Coat Carboline 890LT, or equal. Apply each coat to 4 to 5 mils thick.

b. Finish Coat: Ameron Amercoat 450HS, Kop Coat Carboline 134HS, Tnemec Series 74 Semi-Gloss Endura-Shield, or equal. Apply 1.5 to 2 mills thick.

2.04 VALVE ACTUATORS - MANUAL

A. Buried Service Valves: Provide valve with standard 2-inch AWWA wrench nut and valve box with lid to accommodate operating stem extension.

B. Exposed Service Valves

1. Valves 4 inches and Smaller: Provide with lever type manual operator.

2. Valves Larger than 4 inches: Provide with totally enclosed worm gear actuator with handwheel operator.

C. Provide adjustable stop on manual actuators.

D. Size valve actuator components for the valve design pressure in accordance with AWWA C504. Size manual operators such that the torque that must be applied to the actuator to open the valve does not exceed 80 ft-lbs.

E. Direction of Rotation: Counterclockwise for opening.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Clean interior of valve and valve end joints before installation.

B. Use slings or chains placed around the valve body to lift valve or to lower valve into position. Do not place slings or chains through the port opening or use the mounted actuator for lifting.

C. Valve Seat Positions

1. Clean Water Installations: Install valve with the seat on the downstream side of the plug so that in the closed position the higher upstream pressure in the pipeline applies a seating head on the valve plug against the seat. Install valve with the plug stem in the horizontal position with the plug rotating upwards upon opening.

2. Wastewater Installations and Installations with Entrained Suspended Solids:

a. Vertical Pipe Runs: Install valve with the seat on the top of the valve to prevent solids from packing into body cavity when shut.

b. Horizontal Pipe Runs: Install valve with the seat on the upstream side of the valve to prevent solids from packing in body cavity when shut. Install

valve with the plug stem in the horizontal position with the plug rotating upwards upon opening.

END OF SECTION

SECTION 15121

JOINT GASKETS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Rubber gaskets for push-on compression type joints used with fabricated steel pipe, steel pipe, reinforced concrete pipe, concrete cylinder pipe, and cement mortar lined and coated steel pipe.

1.02 REFERENCED SECTIONS

A. The following Section is referenced in this Section

1. Section 01330 – Submittals

1.03 SUBMITTALS

A. Comply with Section 01330.

B. Provide certified copies of test reports indicating that the gasket material has been tested and that the results of the tests comply with the requirements specified.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Provide synthetic rubber compound in which the elastomer is neoprene.

B. Not less than 50% by volume neoprene.

C. Free from factice, reclaimed rubber, and other deleterious substances.

2.02 COMPOUND PHYSICAL REQUIREMENTS

A. Tensile Properties

1. Test per ASTM D412.

2. Strength: 1,500 psi minimum

3. Ultimate elongation 350% minimum.

B. Hardness

1. Test per ASTM D2240, Type A Durometer.

2. Hardness range: 35 to 50 for concrete spigots and 50 to 65 for steel spigots.

C. Compression Set

1. Test per ASTM D395.

2. Do not exceed 20% when compressed for 22 hours at 70°C.

3. Test specimens.

a. Circular discs cut from the gaskets.

b. Height: 0.500” (±0.005 - 0.025) in height.

c. Diameter: That of the gasket but not to exceed 1.129” ±0.010 in diameter.

D. Aging

1. Test per ASTM D573.
2. Allowable deterioration: less than 20% reduction in tensile strength, 40% reduction in ultimate elongation, and 15 points increase in hardness.

E. Effect of Liquids

1. Test per ASTM D471.
2. Maximum allowable volume change in oil and in water:
   a. Oil: 100% in ASTM oil No. 3.
   b. Water: 15%.
3. Cut circular test specimens from gasket to a thickness of 0.080 ±0.005.

F. Ozone Cracking

1. Test per ASTM D1149.
2. Test specimen: a gasket loop mounted to give at least 20% elongation.
3. No cracking visible at two times magnification of the gasket after 100 hours exposure to 1 mg/l ozone at 40°C.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install as recommended by manufacturer.

END OF SECTION

SECTION 15122

PIPING CONNECTIONS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Methods of connecting metallic piping: flanges, threading, mechanical couplings, dielectric unions, and welding.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 01330 – Submittals
2. Section 09960 – High Performance Coatings
3. Section 15050 – Piping Systems

1.03 SUBMITTALS

A. Comply with Section 01330.

B. For each welder, provide a welder qualification certificate indicating the welder is certified for pipe welding in accordance with ASME Boiler and Pressure Vessel, Section IX.

C. Submit each welder's certificate to the Construction Manager per Section 01330 prior to that welder working on the job.

PART 2 - PRODUCTS

2.01 FLANGE ASSEMBLIES

A. Flanges

1. General
   a. Provide flat-faced flanges or convoluted ring flanges as specified in the following paragraphs.
2. Flat Faced Flanges
   a. Cast iron flanges: face per ANSI B16.1.
   b. Where companion flanges are used, reface the flanges on pipe refaced to be flush with the companion flange face.
   c. Class 150 and Class 300 forged steel flanges: comply with ANSI B16.5.
   d. Lightweight slip-on flanges: comply with AWWA C207, Class B and ANSI B16.5.
   e. Unless otherwise specified, provide steel flanges per ANSI B16.5, Class 150 or AWWA C207, Class D.
   f. Provide Class E AWWA flanges where test pressure exceeds 175 psi.
   g. Do not bolt flat faced flanges to raised face flanges.
3. Convoluted Ring Flanges
   a. Materials: Ductile iron, forged steel or cast stainless steel.
   b. Design to bear on hubs welded to the pipe.

c. Manufacturer

1) Improved Piping Products.

2) The engineer knows of no equal.

d. Rating: not less than 150% of the test pressures listed in Section 15050.

e. Comply with ANSI B 16.5 and AWWA C207.

f. If required by the Construction Manager, provide manufacturer-certified pressure tests demonstrating that the flanges will meet these requirements.

B. Gaskets

1. Material: As specified in Section 15050 and Paragraph 2.05 of this Section 15122.

2. For flat-faced flanges provide full-face type.

3. Thickness: 1/16” for pipe 10” and less in diameter and 1/8” for pipe 12” and larger in diameter.

C. Bolts and Nuts

1. Comply with ANSI B18.2.1 standard square or hexagon head bolts with ANSI B18.2.2 standard hexagon nuts.

2. Threads: Comply with ANSI Bl.1, standard coarse thread series.

3. Bolts: Class 2A.

4. Nuts: Class 2B.

5. Bolt length: Comply with ANSI B16.5.

6. Materials

a. Unless otherwise specified, provide carbon steel machined bolts with hot pressed hexagon nuts.

b. Submerged service: Type 316 stainless steel complying with ASTM F593 and ASTM F594, markings F593F and F594F.

c. Buried service: non-corrosive high-strength, low-alloy steel per AWWA C111 (ANSI A21.11), regardless of any other protective coating.

2.02 MECHANICAL COUPLINGS

A. Manufacturers

1. Sleeve-type mechanical pipe couplings: Rockwell Type 411, Dresser Style 38, or equal, with the stop removed from the middle ring.

2. Reducing couplings: Rockwell Type 415, Dresser Style 62, or equal.

3. Sleeve-type flanged coupling adapters: Rockwell Type 913, Dresser Style 128, or equal.

4. Insulating couplings: Rockwell Type 416, Dresser Style 39, or equal.

5. Bolts and nuts for submerged service: Type 316 stainless steel in conformance with ASTM F593 and ASTM F594, markings F593F and F594F.

6. Bolts and nuts for buried service: Non-corrosive high-strength, low-alloy steel having the characteristics specified in AWWA C111 (ANSI A21.11), regardless of any other protective coating.

7. Gaskets: comply with Paragraph 2.05 and AWWA C111.

B. Plain End Couplings

1. Pipe sizes 6” and smaller: Gustin-Bacon 200, Victaulic Style 99, or equal for Schedule 80 pipe and Gustin-Bacon 205, Victaulic Style 90, or equal for lighter weight pipe.
2. Pipe sizes 8” and larger shall be Gustin-Bacon 200, Victaulic Style 99, or equal.
3. Bolts and nuts: Comply with AWWA C606.
4. Gaskets: Comply with Paragraph 2.05 this Section and AWWA C606.

C. Grooved End Couplings

1. Flexible-type: Gustin-Bacon 100, Victaulic Style 77, or equal.
2. Rigid-type Gustin-Bacon 120 Rigi-Grip, Victaulic Style 07 Zero-Flex, or equal.
3. Use flexible-type couplings:
   a. For all piping greater than 12” in diameter.
   b. For pipe 12” in diameter and less in rack-mounted tunnel piping applications.
   c. For grooved joints adjacent to pump or blower suction and discharge where grooved couplings are used for noise and vibration control.
4. For all other applications of piping 12” and less in diameter use rigid-type couplings.
5. Flanged coupling adapters: Gustin-Bacon 154, Victaulic Style 741, or equal.
6. Snap-joint couplings: Gustin-Bacon 115, Victaulic Style 78, or equal.
7. Cut grooves are not permitted on fabricated or light wall pipe.
8. Unless otherwise specified, bolts and nuts shall comply with AWWA C606.
9. Bolts and nuts for submerged service: Type 316 stainless steel in conformance with ASTM F593 and ASTM F594, markings F593F and F594F.
10. Bolts and nuts for buried service: Non-corrosive high-strength, low-alloy steel having the characteristics specified in AWWA C111 (ANSI A21.11), regardless of any other protective coating.
11. Gaskets: Comply with Paragraph 2.05 and AWWA C606.

2.03 FLEXIBLE EXPANSION JOINTS

A. Materials: EPDM body and ductile iron retaining rings with baked enamel finish.

B. Drill to connect to the pipe flanges.

C. Temperature rating: 350 degrees F minimum or equal.

D. Provide hypalon coating for UV protection.

E. Expansion joints for aeration air service: Four-arch.

F. Manufacturer: Mercer Style HT 500 Series.

2.04 LINK SEALS

A. Where shown on the plans, provide link seals and compatible wall sleeves with weep ring for wall penetrations.

B. Use manufacturers recommended service designation unless noted otherwise.

C. Type: Linked rubber sealing elements and pressure plates tightened together with stainless steel bolts.

D. Manufacturers

1. One of the following or equal:

a. Thunderline Corporation

b. Calpico

2.05 GASKETS

A. Designated in Section 15050.

B. Materials

1. EPDM: ethylene-propylene-diene-terpolymer.

2. Neoprene: neoprene.

3. Nitrile: nitrile (Buna N).

4. Compressed gasketing consisting of organic fibers (Kevlar) and neoprene binder; ASTM F104 (F712400), 2500 psi (ASTM F152), 0.2 ML/HR LEAKAGE FUEL A (ASTM F37).

5. TFE bonded EPDM: TFE bonded to EPDM in full-face gasket having concentric-convex molded rings.

2.06 PIPE THREAD

A. Dimensions and size limits: Comply with ANSI BI.20.1.

2.07 DIELECTRIC ISOLATION

A. General

1. Dielectrically isolate all metallic piping from all other dissimilar metal hangers, brackets, steel reinforcing and all other metal structures.

2. Dielectrically isolate all metallic piping from other piping or other materials constructed from dissimilar metals.

B. Flange Insulators

1. Provide flange dielectric insulation sets with full faced gaskets, full length sleeves, and double insulating washers or as specifically indicated on the drawings.

2. Insulation material for the flange insulation sets: phenolic resin.

3. Provide insulating materials designated by the manufacturer as suitable for use at the operating and test pressures specified for the type of pipe on which the materials are to be installed.

C. Wall Penetrations

1. Prevent metal to metal contact between the pipe and reinforcing steel in the concrete wall.

D. Insulating Unions

1. Comply with Federal Specifications WW-U-532, Class 1 requirements for dimensional, strength, and pressure requirements.

2. Provide insulation barrier which limits galvanic current to 1% of the short circuit current in a corresponding metallic joint.

3. Provide insulating material which is impervious to water.

4. Make each of the union match the type of material to which it connects.

5. Manufacturers, one of the following or equal:

a. EPCO.

b. Capital Manufacturing.

E. Pipe Supports

1. Dielectrically isolate any pipe hangers, supports, brackets and saddles installed on the buried side of dielectric insulators on the protected pipe, from the pipe by insertion of dielectric insulating material between the hanger and the pipe.

2.08 COATINGS

A. Unless otherwise specified, coat flange assemblies and mechanical type couplings for buried installation with System M-1 as specified in Section 09960.

PART 3 - EXECUTION

3.01 PIPE CUTTING, THREADING, AND JOINTING

A. Comply with ANSI B31.1.

3.02 PIPE WELDING

A. Provide ASME-certified welders and use shielded metal arc, gas shielded arc or submerged arc welding methods.

B. Comply with ANSI B31.1 for piping System 8 specified in Section 15050.

C. For piping systems not specified in Paragraph 3.02.B above, comply with AWWA C206.

3.03 TAKEDOWN COUPLINGS

A. Provide takedown couplings consisting of screw unions, flanged or grooved end mechanical coupling type joints as specified.

1. Use flanged or grooved end joints shall be employed on pipelines 2½" in diameter and larger.

2. Where piping passes through walls, provide takedown couplings within 3' of the wall, unless specified otherwise.

B. Provide a union or flanged connection within 2' of each threaded end valve.

3.04 FLEXIBILITY

A. For piping 2" in diameter and larger passing from concrete to earth, provide with two pipe couplings or flexible joints as specified within 2' or one pipe diameter of the structure, whichever is greater.

B. Where required for resistance to pressure, restrain mechanical couplings per AWWA M11, Paragraph 13.10, Tables 13-6 and 13-7, and Figure 13-17.

3.05 DIELECTRIC CONNECTIONS FOR COPPER PIPE

A. Where a copper pipe is connected to steel or cast iron pipe, provide an insulating section of rubber or plastic pipe.

B. Insulating section minimum length: 12 pipe diameters.

C. Dielectric unions as specified in Paragraph 2.07 may be used instead of the specified insulating sections.

D. Where copper pipe is supported from hangers, insulate the pipe from the hangers, or use copper-plated hangers.

3.06 INSULATING FLANGES

A. Install at the specified locations and as shown on the Drawings.

B. Clean all components of all dirt, grease, oil and other foreign materials immediately prior to assembly.

C. Align bolt holes in mating flanges at the time bolts and insulating sleeves are inserted to prevent damage to the insulation.

D. After flanged bolts have been tightened, inspect each insulating washer for cracks or other damage.

E. Replace all damaged washers.

F. After assembly, measure resistance between each bolt and flange with an approved ohmmeter. Minimum acceptable resistance: 50,000 ohms.

G. Coat all insulating flanged joints.

END OF SECTION

SECTION 15141

STEEL PIPE

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Steel pipe and fittings.

B. See Section 15050 for service applications.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 01330 – Submittals
2. Section 01600 – Materials and Equipment
3. Section 09960 – High Performance Coatings
4. Section 15050 – Piping Systems
5. Section 15122 – Piping Connections
6. Section 15996 – Testing Pressure Pipe

1.03 SUBMITTALS

A. Comply with Section 01330.

B. Include the following items:

1. Affidavits of Compliance with AWWA C205, ASTM A53, or ASTM A106 as applicable.
2. Shop drawings, product data sheets, information for linings and coatings.

1.04 QUALITY ASSURANCE

A. Factory test per ASTM A53 or ASTM A106 as applicable.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Comply with Section 01600.

PART 2 - PRODUCTS

2.01 PIPE MATERIALS

A. Provide steel pipe and fittings per ASTM A53 or ASTM A106, as specified in Section 15050.

B. Steel pipe not otherwise specified shall be galvanized.

2.02 PIPE MANUFACTURE

A. ASTM A53

1. Type E, electric resistance welded.
2. Alternative: Type S, seamless pipe.

B. Minimum wall thickness:

1. Schedule 40 for pipe 10” diameter and less.

2. 3/8” for pipes 12”-24” diameter.

3. Provide increased shell thickness where specified.

2.03 CONNECTIONS

A. As specified in Section 15050, conforming to Section 15122.

2.04 FITTINGS AND APPURTENANCES

A. Malleable iron threaded fittings and appurtenances: Comply with ASTM A47 or ASTM A197, ANSI B16.3.

B. Unless otherwise specified, provide steel fittings and appurtenances which comply with ASTM A234, ASTM A105, or ANSI B16.11.

C. Unless otherwise specified, provide fittings which are rated for pressure and external loads equal to the pipe.

2.05 PIPE LINING

A. Epoxy

1. Where specified, line pipe and fittings with a liquid epoxy complying with AWWA C210, with the following exceptions:

a. Do not incorporate coal tar products in the liquid epoxy.

b. The curing agent may be an amidoamine as well as the other curing agents listed in AWWA C210.

2. Applied to a minimum thickness of 16 mils in not less than 2 coats.

B. Cement Mortar

1. Where specified, line pipe and fittings with cement mortar as specified in AWWA C205. See Section 15050 for thickness.

C. High Temperature Service Epoxy (NOT USED)

D. Glass Lining (NOT USED)

2.06 PIPE COATING

A. Epoxy

1. Where specified, coat pipe and fittings with a liquid epoxy as specified in AWWA C210 with the following exceptions:

a. Do not incorporate coal tar products in the liquid epoxy.

b. The curing agent may be an amidoamine as well as the other curing agents listed in AWWA C210.

2. Apply to a minimum thickness of 16 mils in not less than two coats.

B. Polyethylene Tape (NOT USED)

C. See Sections 15050 and 09960.

2.07 FUSION EPOXY COATING AND LINING (NOT USED)

2.08 JOINT GASKETS

A. Comply with Section 15050.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General

1. Install per AWWA M11, Chapter 12.
2. Welded joints: Comply with AWWA C206 and Section 15122.
3. Sleeve-type mechanical pipe couplings: Comply with AWWA M11 and Section 15122.
4. Pipe lining and coatings at field joints shall be applied as specified in Paragraphs 2.05 and 2.06.
5. Unless otherwise specified, buried mechanical couplings and valves shall be field coated as specified in Section 15122.

B. Anchorage

1. Provide anchorage as specified.
2. Provide calculations and drawings for proposed alternative anchorage and submit per Section 01330.

3.02 TESTING

A. Hydrostatic testing: Comply with Section 15050 and Section 15996.

B. Conduct the tests in the presence of the Construction Manager.

END OF SECTION

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SECTION 15143

DUCTILE IRON PIPE

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Ductile iron pipe, joints, fittings, gaskets, and pipe lining and coating.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section:

1. Section 01330 – Submittals
2. Section 15050 – Piping Systems
3. Section 15996 – Testing Pressure Piping

1.03 SUBMITTALS

A. Comply with Section 01330.

B. Certifications

1. Manufacturer's certificates of compliance with the specified standards.

C. Shop Drawings

1. Detailed layout drawings showing alignment of pipes, location of valves, fittings, and appurtenances, types of joints, connections to structures and joint thrust restraint details.

D. Product Data

1. Photographs, drawings, and descriptions of fittings, gaskets, couplings, grooving of pipe and fittings, pipe linings, and coatings.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Block piping material for shipment, prevent damage to castings and linings.

B. Carefully handle piping material during loading, unloading, and installation. Do not drop piping material from cars or trucks. Lower piping material by mechanical means. Do not drop or pound pipe to fit grade.

C. Repair damaged cement mortar lining to match quality, thickness, and bonding of original lining in accordance with AWWA C104. When lining cannot be repaired or repairs are defective, replace defective piping with undamaged piping.

D. Protect gaskets and polyethylene encasement from long term exposure to sunlight.

E. Store fittings and other accessories such that they do not accumulate and hold rainwater, dirt, and debris.

PART 2 - PRODUCTS

2.01 DUCTILE IRON PIPE

A. Type: Conforming to AWWA C150 and AWWA C151 with minimum pressure class 350.

B. Pipe Joints

1. General Intent:

   a. Use push-on type joints on buried pipe unless mechanical joints are specifically indicated on the Drawings.

   b. Use restrained joints on buried piping on fittings that create a change in pipe size and on fittings that result in a change of direction, whether the change is in horizontal plane or a vertical plane.

   c. Use flanged joints on all exposed pipes. Use flanged joints in buried situations only where flanged joints are specifically indicated on the Drawings.

   d. Exposed Piping: To the greatest extent possible, use factory-assembled pipe spools with flanges for exposed piping. Field cutting pipe to match field conditions will be allowed in limited quantities as determined by the Construction Manager.

2. Flanged Joints:

   a. Screw-on type with diameter, thickness, bolt holes, and other characteristics conforming to ANSI B16.1.

   b. Material: Ductile iron.

   c. After installation of flanges, machine flange face to make perpendicular to axis of the pipe.

   d. Bolt Holes on Flanges:

   e. 2-holed and aligned at both ends of pipe.

   f. Cap Screw or Stud Bolt Holes: Tapped.

   g. Bolts and Nuts: Conform to ANSI/ASME B16.1.

      1) Aboveground and Exposed Pipe: Corrosion resistant, high strength, low alloy.

      2) Underground, in concrete pipe valve boxes, or underwater: Use Type 304 or Type 316 stainless steel.

      3) Cut and finish bolts to project a maximum of 1/4-inch beyond nut when joints are assembled.

3. Mechanical Joints:

   a. Joint Design: In accordance with AWWA C111/ANSI A21.11.

4. Restrained Mechanical Joints:

   a. Design: Lug-type joint.

   b. Manufacturers: One of the following or equal:

      1) Pacific States Cast Iron Pipe Company, Lock Mechanical Joint.

      2) American Cast Iron Pipe Company, MJ Coupled Joint.

      3) EBBA Iron, Megalug.

5. Push-on Joints:

   a. Type: Gasketed type joint suitable for buried service.

   b. Conforming to AWWA C111.

   c. Manufacturers: One of the following, or equal:

      1) Fastite Joint as manufactured by American Cast Iron Pipe Company.

      2) Pacific States Cast Iron Pipe Company.

      3) Tyton Joint as manufactured by U.S. Pipe.

d. Not permitted on fittings or specials, unless otherwise specified.

e. Joint Deflection: Provide an allowable deflection up to 5 degrees at specified pressures.

f. Make joint assembly and field cut joints per AWWA C600 and manufacturer's recommendations.

6. Restrained Push-on Joints:

a. Manufacturers: One of the following or equal:

1) United States Pipe and Foundry Company, TR Flex.

2) Pacific States Cast Iron Pipe Company, Thrust Lock.

3) American Cast Iron Pipe Company, Flex Ring or Lok-Ring.

b. Design: Suitable for the following working pressures:

1) For 4- through 24-inch Pipe: 350 pounds per square inch gauge.

2.02 FITTINGS

A. Fittings: Ductile iron conforming to AWWA C110 or AWWA C153.

B. Joint Type: Same as that of the associated piping as specified in Section 15050.

C. Plain end-to-flanged joint connectors using set screws are not acceptable.

2.03 GASKETS

A. Push-on Joints and Mechanical Joints: Synthetic rubber compound in which the elastomer is nitrile or neoprene and conforming to AWWA C111.

B. Flanged Joints: Neoprene.

2.04 PIPE LINNINGS AND COATINGS

A. Asphaltic Base Coating

1. Apply to outside surface of pipes which will not receive another coating. Apply in accordance with AWWA C151/ANSI A21.51.

B. Cement-mortar Lining

1. Apply mortar lining in accordance with AWWA C104 to interior surface of pipe unless un-lined pipe is specifically indicated on the Drawings or specified.

2. Apply mortar to clean, bare metal surfaces, extended to faces of flanges, ends of spigots, and shoulders of hubs.

3. Provide double thickness lining per AWWA C104.

C. Glass Lining

1. General

a. Where specified in Section 15050, glass line interior surfaces of pipe and fittings.

b. Provide vitreous material which is hard, smooth, continuous and formulated to prevent the adherence of grease in sludge and scum lines, and to resist the adherence of crystalline metal salt deposits (Struvite and Vivionite) to sludge and centrate lines in sewage and wastewater treatment plants.

c. Apply to properly prepared pipe and fittings using accepted industry standards.

d. Test per applicable ASTM, NACE and SSPC standards.

2. Manufacturer: VITCO SG-14, Fast Fabricators/Waterworks.

3. Manufacturing MEH-32.

4. Experience: minimum of 5 years of successful experience in the application of high temperature glass and porcelain coatings.

5. Lining Material

   a. Type: Vitreous and inorganic material applied to the internal surfaces that have been prepared by blasting.

   b. Apply lining in a minimum of two (2) coats, separately applied and separately fired.

   c. Expose items to a maturing temperature of approximately 1400 degrees F., at which point the vitreous and inorganic materials melt and fuse to the base metal, forming an integral molecular bond with the base metal surface.

   d. Process subsequent coatings in a similar manner, forcing an integral molecular bond with the base coat.

   e. Apply total minimum thickness of 10 mils (.010") and a maximum of 25 mils (.025") as tested with a micro test or other acceptable dry film thickness gauge.

   f. Withstand a strain of 0.001 inch/inch (the yield point of the base metal) in finished lining without damage to the glass.

   g. Hardness: of 5-6 on the MOHS scale.

   h. Density of 2.5 3.0 grams per cubic centimeter per ASTM D792.

   i. Capable of withstanding an instantaneous thermal shock of 350 degrees F. differential without crazing, blistering or spalling.

   j. Resistant to corrosion of between PH-3 and PH-10 at 125 degrees F.

   k. No visible loss of surface gloss to the lining after immersing a production sample in an 8% sulfuric acid solution at 148 degrees F. for a period of 10 minutes.

   l. Weight loss of not more than 3 milligrams per square inch, when tested per ASTM C2883.

6. Testing and Certification

   a. Per the recommended industry standards under ASTM D5162-01, NACE RP 0188-99, and SSPC Coating Manual, Volume 1, Section XIV, test the glass lining by "low voltage, wet sponge, non-destructive holiday detection unit".

   b. Only isolated voids permitted due to casting anomalies and which represent less than 0.01% of the total glassed surface.

2.05 DUCTILE IRON PIPE APPURTENANCES

A. Dismantling Joints

1. Flange Spool: AWWA Class D Steel ring flange. Pipe is ASTM A36 plate.

2. End Ring and Body: ASTM A36 steel.

3. Gaskets: NBR made from rubber compounded for water and sewer service.

4. Bolts and Nuts: Type 304 stainless steel conforming to ASTM A588.

5. Pressure: Rated to 150 psi.

6. Manufacturers: Romac Industries Inc., DJ400 or equal.

B. Lug-type Restrained Flange Adapters

1. Use lug type restrained flanged adapters when connecting flanged joints on pipe, fittings, or valves to straight pipe that has been cut to length in the field.

2. Material: Ductile iron conforming to ASTM A536.

3. Restraint Mechanism: Consists of multiple gripping wedges designed to maximize restraint capability. Use torque limiting actuating screws to insure proper initial set of gripping wedges. Restrained flange adapters using set screws are not acceptable.

4. The flange adapter shall be capable of deflection during assembly, or permit lengths of pipe to be field cut, to allow a minimum of 0.6" gap between the end of the pipe and the mating flange without affecting the integrity of the seal.

5. Manufacturers: EBAA Iron Inc. Series 2100 Megaflange, or equal.

2.06 POLYETHYLENE ENCASEMENT

A. Polyethylene Encasement Sheets or Tubes:

1. 8 mil thickness low density polyethylene, or

2. 4 mil thickness high density, cross laminated polyethylene.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General

1. Install ductile iron piping in accordance with AWWA C600, modified as specified in Section 15050.

2. Lay mechanical joint or bell and spigot pipe with 1/8 inch space between the spigot and shoulder of the pockets.

B. Polyethylene Encasement

1. Wrap ductile iron pipe to be buried with polyethylene encasement in accordance with ASTM A674 and AWWA C105.

2. Repair tears and make joints with two layers of plastic tape.

3.02 FIELD QUALITY CONTROL

A. Test ductile iron piping as specified in Section 15996.

END OF SECTION

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SECTION 15145

POLYVINYL CHLORIDE (PVC) PRESSURE PIPE (AWWA C900)

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Polyvinyl chloride pipe manufactured in compliance with AWWA C900, sizes ½-inch through 24-inch.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this section:

1. Section 01330 – Submittals
2. Section 01600 – Materials and Equipment
3. Section 15996 – Testing Pressure Pipe

1.03 SUBMITTALS

A. Comply with Section 01330.

B. Product Data

1. Manufacturer's product data for all materials proposed for use in the Work.
2. Shop drawings showing detailed layout of pipe spools, spacers, adapters, connectors, fittings and pipe supports not indicated in the Contract Documents.
3. Manufacturer's technical data and installation instructions.
4. Manufacturer's certificate of compliance indicating that all materials provided under this Section meet the requirements of the Contract Documents.

C. Test reports from:

1. Hydrostatic proof testing
2. Sustaining pressure testing
3. Burst strength testing

D. Certification that pipe meets NSF/ANSI 61 requirements for potable water distribution piping.

E. Warranty

1.04 DEFINITIONS

A. Field joints: Joints between subsequent pipe pieces (does not include fitting joints).

1.05 PRODUCT, DELIVERY, STORAGE, AND HANDLING

A. Comply with Section 01600.

B. Handling

1. Use wide fabric choker slings.
2. Do not drop pipe or fittings.
3. Do not use hooks.

4. Use extra care when handling and installing PVC pipe during cold weather due to reduced impact resistance.

5. Pipe shall be transported in a vehicle having a bed long enough to provide support for the full length of pipe. The shipping company shall protect the loaded pipe to avoid vehicle exhaust during transit.

C. Storage

1. Store in accordance with the manufacturer's requirements.

2. Store pipe at the job site in unit packages provided by the manufacturer.

3. Avoid compression, damage, or deformation to the pipe bells and barrels.

4. Keep manufactures pipe supports and straps in place until just before installation.

5. When unit packages of flexible pipe are stacked, ensure that weight or upper units do not cause deformation to pipe in lower units.

6. When long-term storage with exposure to direct sunlight is unavoidable, cover flexible pipe with an opaque material while permitting adequate air circulation above and around the pipe as necessary to prevent excessive heat accumulation.

7. Do not store flexible pipe close to heat sources or hot objects such as heaters, boilers, steam lines, engine exhaust, etc.

8. When work is not in progress, open ends of pipe and fittings shall be securely closed so that no water, earth, or other substances will enter the pipe of fittings.

9. Protect gaskets and/or rubber rings from excessive exposure to heat and sunlight.

1.06 INSPECTION

A. Factory Inspection

1. Pipiping and PVC fittings may be subject to inspection at the place of manufacturer in accordance with the referenced standards at the option of the Owner.

2. Notify the Owner 14 calendar days prior to the start of any phase of the pipe manufacture.

3. During manufacture of the pipe, give the Owner or Owner’s representative access to all areas where manufacturing is in process to make inspections to confirm compliance with the Contract Documents.

1.07 TESTING

A. Except as modified herein, factory test pipe in compliance with AWWA C900.

B. Contractor shall pay all expenses incurred for testing or providing samples.

PART 2 - MATERIALS

2.01 PIPE

A. Polyvinyl Chloride (PVC) pressure pipe less than 4-inches in diameter:

1. PVC Schedule Type Pipe : Schedule 40 per ASTM D2466 or Schedule 80 per ASTM D2467.

2. Pipe Materials: Manufactured from 12454B virgin compounds as defined in ASTM D1785.

3. Fittings: In Accordance with ASTM D2466 or ASTM D2467, welded solvent in accordance with ASTM D2564.

B. Polyvinyl Chloride (PVC) pressure pipe 4- through 24-inches nominal size:

1. Conform to AWWA C900, Pressure Class 305 and DR of 14 unless otherwise indicated.
2. Pipe Materials: Manufactured from Class 12454A or 12454B virgin compounds as defined in ASTM D1784.
3. Joint Design: Bell and spigot push-on, O-ring gasket, compression type conforming to ASTM D3139.
4. Gaskets: Elastomeric with solid cross section, conforming to the requirements of ASTM D3139 and ASTM F477.
5. Pipe Lengths: Standard laying length of 20 feet. Shorter pipe lengths may be used in curved alignments to meet manufacturer's joint deflection limitations.
6. Minimum pipe stiffness (F/dY) at 5 percent deflection shall be 914 psi when tested in accordance with ASTM D2241.
7. Color: Pantone 522 Purple.
8. Markings: "Caution: Reclaimed Water – Do Not Drink". Stamp on opposite sides of pipe every three feet.

2.02 FITTINGS

A. Ductile iron conforming to AWWA C153.

1. Cement-mortar lined in conformance with AWWA C104.
2. Minimum working pressure (12-inch and smaller): 350 psi.
3. Minimum working pressure (16-inch to 20-inch): 250 psi.
4. Mechanical joint conforming to AWWA C111.
5. Use flanged fittings where required to connect to flanged valves and other flanged piping components. Conform to the requirements of AWWA C115 for flanged ductile iron pipe and fittings.
6. Rubber rings for use in couplings and fittings shall conform to the requirements of ASTM F477. Rubber rings shall be clearly labeled with the material type.
7. Size for dimensions of the pipe being used.

B. PVC:

1. Polyvinyl Chloride (PVC) conforming to AWWA C900
2. Pressure class: Match the pipe pressure class or greater.

2.03 RESTRAINED JOINTS

A. Restrain pipe by use of joint restraint devices installed as indicated or as necessary to restrain the pipe joint from coming apart due to internal pressure. Do not use concrete thrust blocks to restrain pipe joints unless specifically indicated on the Drawings.

B. Field joints, 4-inch to 12-inch diameter pipe:

1. Harness type joint restraint specifically designed for use with the specified pipe.
2. Description: Two rings that clamp to the pipe which utilize machined teeth to grip the outside surface of the pipe and rods to connect the two rings to restrain the joint.

3. Design and Materials

a. Restrainer Rings: Ductile iron conforming to ASTM A536, split ring with clamping lugs and bolts, serrated on inside face. Do not use concrete thrust blocks to restrain pipe joints unless specifically indicated on the Drawings.

b. Bell Rings: Ductile iron, split, non-serrated ring installed behind and against the pipe ring.

c. Restraint rods: High strength, low alloy steel per AWWA C111. Use to connect the bell ring and restrainer ring to fully restrain the pipe joint from separation.

d. Pressure Rating: 200 psi with a minimum safety factor of 2.

e. Coating: Epoxy enamel or fusion bonded epoxy applied in the factory.

4. Manufacturers:

a. EBAA Iron, Series 1500.

b. Romac Industries, Style 611.

c. Or equal.

C. Field joints, pipe larger diameter than 12 inches:

1. Harness type joint restraint specifically designed for use with the specified PVC pipe and passing the performance testing requirements outlined in ASTM F1674.

2. Design and Materials

a. Restrainer rings: Ductile iron or mild steel, split ring with clamping lugs and bolts, serrated on inside face. Install on spigot end of the pipe.

b. Bell Rings: Ductile iron or mild steel, split, non-serrated ring installed behind and against the pipe ring.

c. Restraint rods: High strength, low alloy steel per AWWA C111. Use to connect the bell ring and restrainer ring to fully restrain the pipe joint from separation.

d. Pressure Rating: 200 psi with a minimum safety factor of 2.

e. Coating: Epoxy Factory applied enamel or fusion bonded epoxy.

3. Manufacturers:

a. Romac Industries, Style 470SJ,

b. EBAA Iron, Series 2800,

c. Or equal.

D. Thrust Restraint Harness for Flexible Couplings

1. Design

a. Split restraint rings manufactured from ductile iron with gripping wedges that are tightened against the exterior surface of the pipe.

b. Incorporate tie bars into the harness that span the distance between the restraint rings and provide adequate clearance from the flexible coupling.

c. Pressure Rating: 200 psi with a minimum safety factor of 2.

d. Coating: Epoxy enamel or fusion bonded epoxy applied in the factory.

2. Manufacturers: One of the following, or equal:

a. EBAA Iron, Series 1100HV (14-inch to 30-inch) or Series 1900 (12-inch and less).

b. Romac Industries, Series 470 (14-inch to 24-inch) or Series 611 (12-inch and less).

E. Restrained Joints on Ductile Iron Pipe Fittings and Valves

1. Specifically designed for use with the specified PVC pipe.

2. Designed as a mechanical joint follower gland for ductile iron fittings and valves with mechanical joint ends. Designed with multiple gripping wedges to grip the outside surface of the PVC pipe.

3. Materials

a. Gland Body, Wedges and Wedge Actuating Devices: Ductile iron conforming to ASTM A536 steel.

4. Pressure Rating: 200 psi with a minimum safety factor of 2.

5. Manufacturer:

a. EBAA Iron, Series 2000PV (3-inch through 36-inch)

b. Romac Industries, RomaGrip (3-inch through 24-inch)

c. Or equal.

F. PVC fittings:

1. Use harness restraint system for field joints.

2. Manufacturer: One of the following or equal:

G. Romac Industries, Series 611 (12 inch and less).

PART 3 - EXECUTION

3.01 GENERAL

A. Install PVC pipe in conformance with the AWWA M23 as modified herein.

3.02 INSPECTION

A. Promptly remove PVC pipe with any of the following visual defects from the project site:

1. Pipe that is sufficiently out-of-round to prohibit proper joining.

2. Improperly formed ends.

3. Fractured, cracked, chipped, dented, gouged, scratched or otherwise damaged pipe.

4. Pipe that has been damaged during shipment or handling.

5. Discolored Pipe.

3.03 PREPARATION

A. Straight Pipe Runs: Cut pipe smooth, straight, and at right angles to the pipe axis with saws or pipe cutters designed specifically for the material.

B. Remove any burrs and dust from the jointing surfaces.

C. Bevel cut ends in accordance with manufacturer's recommendations.

3.04 INSTALLATION

A. Prior to making up pipe joints, clean the socket and plain end of the pipe and apply pipe lubrication meeting the requirements of AWWA C111.

B. Lubricate the entire circumference of the spigot end of the pipe, especially the beveled end. Use lubricant for the pipe gaskets furnished by the pipe manufacturer. No substitutes will be permitted.

C. Do not lubricate the gasket or the gasket groove in the bell to avoid gasket displacement.

D. Keep lubricated spigot clean. If sand or dirt adheres to the spigot lubrication, wipe spigot clean and re-lubricate.

E. Insert the plain end of the pipe into the bell in uniform contact with the gasket. Push the spigot into the bell until the reference mark on the spigot end is flush with the end of the bell. Use a bar or block to assemble the joint. Pullers such as come-along may also be used. Do not use the excavation equipment to assembly the pipe joint.

1. If undue resistance to insertion of the spigot is encountered or the reference mark is not reached the flush position, disassemble the joint, check gasket and reposition if necessary, clean the gasket, bell and spigot and repeat the assembly steps.

F. Keep pipe lengths in proper alignment. Keep pipe lengths straight, so not bend pipe to meet alignment or curve radius.

G. Do not disturb previously completed joints during the joining operation.

H. Close off open ends of pipe when pipe laying is not in progress.

3.05 JOINT DEFLECTIONS

A. Make pipe deflections with ductile iron fittings. Do not pull field joints or PVC fitting joints.

B. Allowable ductile iron fitting joint pulls: No more than 75 percent of the manufacturer's allowable joint pull for the size and DR rating of pipe being placed.

C. Pipe may not be offset to a degree such that the spigot end of the pipe deflects (touches) against the end of the pipe bell.

3.06 DUCTILE IRON FITTINGS (NOT USED)

3.07 THRUST RESTRAINT

A. Install thrust restraint devices in conformance with the manufactures recommendations.

B. Tighten bolts on joint restraint device to the torque recommended by the manufacturer.

3.08 PIPE LOCATION

A. Install locator tape over non-metallic pipe and include a metallic substance that can be registered by magnetic field location device.

B. Install tracer wire on all non-metallic pressurized pipelines.

1. All runs of non-metallic water pipe, including services, shall have a No.12 gauge, solid, soft drawn, copper wire insulated with high molecular weight polyethylene (HMWPE) insulation laid along the top of the pipe to facilitate locating the pipe at a later date. Tracer wire shall be taped to top of pipe every 10 feet. Wire must be a continuous strand.

2. The wire shall be stubbed up inside each valve box or can. Crimpable copper butt splice kits are permitted in valve boxes or cans only.

3. Conduct continuity test on each splice at all locations.

a. The Contractor shall retain a third-party specialist to facilitate a continuity test on the tracer wire.

b. The Contractor shall submit a certified report by the third-party testing service stating the tracer wire is performing satisfactorily.

c. All tests must be reviewed and approved by the Engineer and/or Owner before the work is accepted.

d. All construction defects must be repaired and retested before final acceptable is made.

e. All unacceptable tests must be re-performed by the Contractor at no additional cost to the Owner.

3.09 FIELD QUALITY CONTROL

A. Pressure test per Section 15996.

B. When testing is unsuccessful, remove defective pipe or make necessary corrections and re-test.

C. Following successful testing, drain water from the pipe; secure both ends with caps and leave in place for future connection.

END OF SECTION

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SECTION 15201

STAINLESS STEEL PIPE

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Stainless steel piping.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section:

1. Section 01330 – Submittals
2. Section 15996 – Testing Pressure Piping

1.03 PREPARATION OF LAYOUT DRAWINGS

A. No attempt has been made on the design Drawings to provide dimensions, locations and orientation of fittings or invert elevations of the pipeline.

1. Take detailed field measurements to determine layout of new pipeline and to provide information for development of layout drawings.

a. Utilize layout drawings to shop-fabricate pipe sections.

2. Provide shop fabricated piping sections is pieces that are as long as possible, while still allowing for pickling and passivation, shipment and installation, so that field joints are minimized.

a. Piping design indicated on the Drawings illustrates the general piping layout and configuration. No attempt has been made to indicate the location of field joints and couplings that may be needed to connect shop-fabricated piping sections in the field.

1.04 SUBMITTALS

A. Comply with Section 01330.

B. Layout Drawings

1. Illustrate configuration of pipe, fittings, supports and piping appurtenances. Identify each piping section that will make up the system including dimensions, elevations, locations of joints for field assembly and installation details.
2. Identify pipe wall thickness, details of joint design and maximum joint deflection, restrained joint details and other piping details.
3. Details of fittings and pipe specials including elbows, tees, wyes, outlets, connections, nozzles and other special components of the piping system.
4. Welding details including location, type and size.
5. Provide layout drawings in latest version of AutoCAD. Submit AutoCAD files after layout drawings have been reviewed and accepted by Engineer.

C. Product Data

1. Information on joint types and components used in the system including stub ends, backing flanges, flanged joints, grooved joint couplings and screwed joints.
2. Material specifications for pipe, gaskets, fittings, and couplings.

D. Manufacturing certifications.

1.05 QUALITY ASSURANCE

A. Welder Qualifications: Utilize skilled welding operators, qualified under the provisions of AWS D1.1, to fabricate steel pipe.

1.06 SHIPPING, HANDLING, AND STORAGE

A. Straight Pipe Sections: Support pipe sections on a minimum of two padded saddles, spaced at intervals not exceeding 20 feet. Provide saddles with a width that provides at least a 90-degree contact angle.

B. Fabricated Specials: Support on padded saddles, and crate as necessary to protect fabricated assembly.

C. Handling and Storage

1. Handle pipe using slings, padded cradles or other devices that will not damage to the pipe. Do not use chains, hooks or other equipment, which might damage the pipe.

2. Do not roll pipe during handling operations.

3. Do not stack pipe.

D. Provide adequate stulling and cross bracing for all pipe sections to prevent damage during handling, storage, hauling, and installation.

E. Shop Fabrication: Fabricate piping sections in the shop and pickle and passivate at point of manufacture.

PART 2 - PRODUCTS

2.01 PIPE MATERIALS

A. Pipe fabricated from commercial stainless steel pipe: Use stainless steel Type 304L material conforming to ASTM A240.

2.02 PIPE MANUFACTURE

A. Unless otherwise specified, ASTM A240 pipe shall be manufactured in accordance with ASTM A778.

B. Wall Thickness: Minimum wall thickness corresponding to Schedule 10S.

C. Welding

1. Prepare welds in accordance with AWWA C200.

2. Welded Joints: Butt-welded with complete penetration and fusion, free from unsound metal, pinholes, cracks and other weld defects.

3. Weld Finish: Reasonably smooth, free of depressions, burrs, weld splatter and other irregularities and suitable for application of protective coatings and linings.

D. Pickling and Passivation

1. Following shop fabrication of pipe sections, straight spools, fittings, and other piping components, pickle and passivate fabricated pieces.

2. Immerse fabricated pieces in sulfuric acid solution followed by immersion in a nitric-hydrofluoric bath and subsequent wash at the proper temperature and length of time.

3. Finish Requirements: Remove free iron, heat tint oxides, weld scale, and other impurities, and obtain a passive finished surface.

2.03 FITTING AND APPURTENANCES

A. Fittings and Piping Specials

1. Stainless steel fittings or segmentally welded fittings with ends designed for butt-welded joints. Fabricate fittings from Schedule 10S 304L stainless steel pipe.

2. Dimensional Standards

a. Fittings with Weld Ends: In accordance with ANSI B16.9.

b. Fittings with Flanged Ends: In accordance with ANSI B16.5, Class 150.

3. Wall Thickness of Fittings: In accordance with ANSI B36.19 for the schedule of pipe specified.

B. Stainless Steel Fittings and Appurtenances: Conform to the requirements of ASTM A240 stainless steel grade to match the pipe.

C. Standard Steel Fittings: Conforming to ASTM A774.

D. Pressure Ratings and Loadings: Equal to the pipe rating.

E. Threaded Outlet Couplings: Forged stainless steel, 3,000 psi service rating.

2.04 PIPE JOINTS

A. Where the type of joint is specifically indicated on the Drawings or specified, design and shop-fabricate piping sections utilizing the type of joint illustrated or scheduled.

B. Where the type of joint is not specifically indicated on the Drawings or specified in the Piping Schedule, design and shop-fabricate piping sections utilizing any of the following joint types:

1. Piping stub ends with backing flanges. Cast Type 304L stainless steel stub ends with machined gasket surfaces and cast or forged Type 304 stainless steel backing flanges with drilled bolt holes conforming to ASNI B16.5, Class 150.

2. Double butt-welded joints.

3. Flanged joints conforming to the requirements of ANSI B16.5, Class 150.

4. Grooved joints.

2.05 BOLTS, NUTS, AND GASKETS

A. Bolts and Nuts: Type 316 stainless steel conforming to ASTM A194 (bolts) and ASTM A194 (nuts).

B. Gaskets: EPDM or nitrile.

2.06 STAINLESS STEEL TUBING

A. Seamless tubing made from Type 304 stainless steel and conforming to ASTM A269, wall thickness not less than 0.035 inch.

B. Fittings: Swage ferrule design, with components made of Type 316 stainless steel.

1. Double acting ferrule design providing both a primary seal and a secondary bearing force. Flare, bite or compression type fittings are not acceptable.

2. Manufacturers: Crawford Fitting Company, Swagelock; Hoke, Garlock; Parker, CPI, or equal.

PART 3 - EXECUTION

3.01 FIELD ASSEMBLY OF SHOP-FABRICATED PIPING SECTIONS

A. Assemble shop-fabricated piping sections in the field using the joints designed in the piping layout or by using flexible couplings. Field welding is prohibited.

B. Join shop-fabricated piping sections together using backing flanges, flexible couplings, flanged coupling adapters or flanges.

C. Slope horizontal lines so that they can be drained completely.

D. Provide valve drains at low points in piping systems.

E. Install eccentric reducers where necessary to facilitate draining of piping system.

F. Provide access for inspection and flushing of piping systems to remove sediments.

3.02 TESTING

A. After the pipe sections are installed, test the pipe for pressure loss in accordance with Section 15996. Test pressure is 25 pounds per square inch. Conduct test in the presence of the Construction Manager. Allowable leakage is zero.

B. Visually inspect pipe for welding defects such as crevices, pits, cracks, protrusions, and oxidation deposits.

END OF SECTION

SECTION 15250

PIPE INSULATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Piping insulation.

1.02 REFERENCED SECTIONS

A. The following Section is referenced in this Section

1. Section 01330 – Submittals

1.03 REFERENCED STANDARDS

A. American Society for Testing and Materials (ASTM)

1. C534 – Standard Specification for Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form
2. C547 – Standard Specification for Mineral Fiber Pipe Insulation
3. C553 – Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications
4. D1056 – Withdrawn 1992: Practice for Preparation of Loose Fill Mineral Fiber Thermal Insulation Samples for Testing
5. E84 – Standard Test Method for Surface Burning Characteristics of Building Materials
6. E96 – Standard Test Methods for Water Vapor Transmission of Materials

B. National Fire Protection Association (NFPA)

1. 255 – Standard Method of Test of Surface Burning Characteristics of Building Materials

1.04 SUBMITTALS

A. Comply with Section 01330.

B. Product technical data including:

1. Acknowledgement that products submitted meet requirements of standards referenced.
2. Manufacturer's installation instructions.
3. Submit complete specification of insulation materials, adhesives, cement, together with manufacturer's recommended methods of application and coverage for coatings and adhesives.

C. Submit itemized schedule by building of proposed insulation systems showing density, thermal conductivity, thickness, adhesive, jackets and vapor barriers.

D. Certifications: Products will meet the requirements of the Contract Documents.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:

1. Elastomeric insulation:
    a. Rubatex.
    b. Armstrong.
    c. Or equal.
2. Fiberglass insulation:
    a. Certainteed Corporation.
    b. Schuller (Manville).
    c. Owens Corning.
    d. Knauf.
    e. Or equal.
3. PVC jacket:
    a. Ceel-Co.
    b. PIC Plastics.
    c. Or equal.

B. Submit request for substitution in accordance with Section 01330.

2.02 PIPING INSULATION - ELASTOMERIC

A. General:

1. Insulation fire and smoke hazard ratings for composite (insulation, jacket or facing, and adhesive used to adhere the facing or jacket to the insulation), as tested by procedure ASTM E84 (UL723), NFPA 255, not exceeding:
    a. Flame spread: 25.
    b. Smoke developed: 100.
2. Accessories (adhesives, mastics, cements, and tapes: Same component ratings as listed above.
3. Indicate on product labels or their shipping cartons: Flame and smoke ratings do not exceed above requirements.
4. Permanent treatment of jackets or facings to impart flame and smoke safety is required.
    a. Water-soluble treatments are prohibited.
5. Insulated shields at pipe support points.

B. Pipe, Fitting, and Valve Insulation:

1. Flexible elastomeric closed cell pipe insulation.
    a. ASTM C534, Grade I.
    b. Average thermal conductivity not to exceed 0.28 (Btu-IN)/(HR-FT^2-DegF) at mean temperature of 75 DegF, temperature range -40 to 220 DegF; permeability not to exceed 0.20 by ASTM E96; water absorption 3 percent by ASTM D1056 and ozone resistance.

2. Provide minimum insulation thickness conforming to schedules or as shown on the Drawings.

2.03 PIPING INSULATION - FIBERGLASS

A. Pipe and Fitting Insulation:

1. Preformed fiberglass pipe insulation:

a. ASTM C547 Type I:

1) Density: 4 LBS/CF.

2) Temperature rated: 650 DegF.

3) Average thermal conductivity not to exceed 0.24 (Btu-IN)/(HR-FT^2-DegF) at mean temperature of 75 DegF.

4) Fire hazard rating:

a) ASTM E84 (UL723), NFPA 255.

b) Flame spread not exceeding 25 and smoke developed not exceeding 100.

2. Moisture adsorption:

a. ASTM C553.

b. Not greater than 0.5 percent moisture by volume when exposed to moisture laden air at 120 DegF and 96 percent RH.

3. Fungi and bacteria resistance:

a. ASTM C665.

b. Does not breed or promote growth.

c. Flame attenuated glass fibers bonded with thermosetting resin.

4. Piping jackets (general applications):

a. Aluminum: 16 mil embossed aluminum.

b. PVC: Preformed 0.028 IN thick PVC jackets fabricated from B.F. Goodrich PVC sheeting V-66 with proven resistance to ultraviolet degradation when temperatures do not exceed the limits of PVC.

c. Piping jacket not required on concealed piping.

5. Provide minimum insulation thickness conforming to schedules or as shown on the Drawings.

2.04 SUBSTITUTION

A. Submit request for substitution in accordance with Section 01330.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. General:

1. Consider piping as exposed, except as otherwise indicated.

2. Provide release for insulation application after installation and testing is complete.

a. Apply insulation on clean, dry surfaces after inspection.

3. Provide insulation continuous through wall, roof and ceiling openings, pipe hangers, supports and sleeves.

4. Provide insulation with vapor barrier for piping where surfaces may be cooler than surrounding air temperatures.
    a. Provide vapor barrier (0.17 perm-IN; ASTM C553) continuous and unbroken.
    b. Hangers, supports, anchors, and related items that are secured directly to cold surfaces must be adequately insulated and vapor-sealed to prevent condensation.
5. Apply specified adhesives, mastics and coatings at the manufacturer's recommended overage per unit volume.

C. Piping Insulation - Elastomeric:

1. Slip insulation on pipe prior to connection.
    a. Whenever the slip-on technique is not possible provide insulation neatly slit and snapped over the pipe.
2. Fabricate and install fitting cover insulation according to manufacturer's recommendations.
3. Seal joints, slits, miter-cuts and other exposed edges of insulation with adhesive, recommended by the insulation manufacturer, to ensure complete vapor barrier.

D. Piping Insulation - Fiberglass:

1. Apply over clean dry pipe.
    a. Butt all joints together firmly.
2. Seal joints, slits, miter-cuts and other exposed edges of insulation as recommended by the insulation manufacturer.
3. Insulate fittings, valves, and flanges with insulation thickness equal to adjacent pipe.
2. PVC pipe jacket:
    a. Apply jacketing with a minimum of 1-inch overlap.
        1) Weld longitudinal and circumferential seams with adhesives as recommended by manufacturer.
    b. Provide slip-joints every 30 feet and between fittings if distance exceeds 8 feet.
        1) Construct slip-joints by overlapping jacket sections 6 to 10 inches.
    c. Provide premolded PVC covers of same material and manufacturer as jacket for fittings, valves, flanges, and related items in insulated piping systems.
3. Aluminum pipe jacket:
    a. Field-applied aluminum jacket with vapor-sealed longitudinal and butt joints.
    b. Provide smooth and straight joint with a minimum 2-inch overlap.
    c. Secure joints with corrosion-resistant screws spaced 0.25 to 0.50 inches back from edge.
    d. Center spacing of screws 5 inch maximum or as required to provide smooth tight-fitted joints.
    e. Place joints on least exposed side of piping to obtain neat appearance.

3.02 REPAIR

A. Whenever any factory applied insulation or job-applied insulation is removed or damaged, replace with the same quality of material and workmanship

3.03 SCHEDULES

A. Pipe, Fittings and Valves:

1. Use preformed fiberglass.

2. Schedule:

Application	Pipe Size	Thickness, inch	Jacket
FTH	Less than 2 inch	.05	PVC

END OF SECTION

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SECTION 15996

TESTING PRESSURE PIPING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Hydrostatic pressure pipeline testing.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section:

1. Section 01330 – Submittals
2. Section 01500 – Construction Facilities and Utilities
3. Section 01999 – Reference Forms
4. Section 15050 – Piping Systems

1.03 SUBMITTALS

A. Provide Submittal per Section 01330.

B. Testing Schedule and Notification of Testing: Submit advance written notice of testing activities a minimum of 48 hours prior to conducting piping tests.

C. Testing Plan: Submit a written plan that identifies the methods for water procurement, conveyance and disposal.

D. Completed Pipe Test Record Forms, found in Section 01999.

1.04 TESTING REQUIREMENTS

A. Furnish personnel, materials, bulkheads, test plugs, restraints, anchors, temporary connections, pumps, pressure gauges and other equipment needed to perform testing.

B. Water for Testing

1. Use potable water for pressure testing pipelines. Obtain water from the source identified in Section 01500.
2. Disposal:
   a. Obtain approvals from the California Regional Water Quality Control Board and other regulatory agencies to dispose of water in existing drainage ditches and other surface water features. Pay all costs to convey or transport water to the point of disposal.
   b. Dispose of water used for testing pipelines in the Plant Drain Pump Station.

C. Test only those portions of the pipe that have been installed as part of this Contract.

1. Test new pipe sections prior to making final connection to existing piping.
2. Install test plugs or bulkheads to isolate new piping systems.
3. Unless otherwise indicated, valves may not be used to isolate portions of the piping system for purposes of testing. When testing against a valve is indicated or approved by the Owner, provide a test plate “pancake” to further isolate the new and existing piping.

D. Sequence

1. Buried Pressure Piping: Except as otherwise indicated, conduct piping pressure test after trench has been backfilled to subgrade and compacted. Piping may be tested before or after final paving, at Contractor's option.

2. Encased Piping: Test before encasing pipe in concrete.

E. Failed Tests: Make necessary corrections or remove defective pipe or defective appurtenances. Repeat pressure test until a successful test is achieved.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

A. Test pipelines, appurtenances, valves and fittings in the pipeline system.

B. Where allowable leakage rates are not specifically indicated, no leakage is allowed.

C. Perform testing operations in the presence of the Engineer.

D. Prior to pressure testing, clean pipeline of debris, construction materials, dirt and other foreign material within the piping system.

E. Do not test pipelines until thrust restraint devices have been installed. Where concrete thrust blocks are used, do not begin pressure test until concrete has attained an age of at least 7 days unless otherwise approved by the Owner. Pressure test buried pipe after backfill.

F. After testing has been completed, drain test water from pipelines and leave in clean condition.

3.02 FILLING PIPING SYSTEMS WITH WATER

A. Place temporary bulkheads in the pipe at the ends of the test section, and then slowly fill the pipeline with water at a rate which does not cause surges or exceed the rate at which the air can be released through the air valves.

B. Ascertain that test bulkheads are suitably restrained to resist the thrust of the test pressure without damage to, or movement of, the adjacent pipe.

C. Purge air within the pipeline during the filling operation. Check proper operation of air release valves and air vents during the filling operation to ascertain proper operation and venting of air from the pipeline.

D. Concrete pipe, cement-mortar lined pipe and other pipe made from water absorbing material:

1. After the filling operation is complete, allow the filled pipeline to stand under a slight pressure for at least 24 hours to allow air to escape from any air pockets within the pipeline and the pipe lining to absorb water.

2. Examine bulkheads, valves and connections for leaks during this period. If leaks are found, make corrections before conducting the pressure test.

3.03 PRESSURE TESTING EXPOSED PIPING

A. Test exposed piping as follows:

1. Fill section of piping under test with water and raise the system pressure to the test pressure specified in the Piping Schedule in Section 15050.

2. Visually inspect exposed pipe joints, joints at fittings, valves, hydrants, and other piping appurtenances for leaks.

3. Correct leakage as necessary to eliminate the leakage.

4. Duration of Pressure Test: 2 hours.

5. Leakage Allowances: Zero leakage.

6. Correct any visible leakage by tightening flanges and screwed joints, replacing gaskets or removing defective materials.

7. Repeat test until no leakage is observed.

8. Record results of pressure test on Pipe Test Record form, included in Section 01999.

3.04 PRESSURE TESTING BURIED PIPING

A. Pressure test buried piping as follows:

1. Fill section of piping under test with water and raise the system pressure to the test pressure specified in the Piping Schedule 15050.

2. Visually inspect exposed pipe joints, joints at fittings, valves, hydrants, and other piping appurtenances for leaks.

3. Correct visible leaks necessary to eliminate the leakage.

4. Duration of Pressure Test: 2 hours.

5. Leakage Measurement:

a. Begin test once visible leaks have been eliminated.

b. Maintain test pressure during the test period by adding makeup water to a calibrated test reservoir.

c. Accurately measure the volume of makeup water introduced into the pipeline to maintain the test pressure to determine the leakage rate for the test.

6. The pipeline pressure test is successful when the makeup water added during the test is equal to or less than the allowable leakage rate (L) defined below.

7. Gasketed Ductile Iron Pipe (mechanical or push-on joint)

$$L = \frac{SD(P)^{1/2}}{148{,}000}$$

L = Allowable leakage in gallons per hour.

S = Length of the test section in feet.

D = Nominal diameter of the piping in inches.

P = Test pressure in pounds per square inch gauge.

8. Steel Pipe (AWWA C200, Concrete Bar Wrapped Cylinder Pipe (AWWA C303)

a. Gasketed joints:

1) L= 6.25 gallons/inch diameter/mile/24 hours

2) L= allowable makeup water in gallons.

b. Welded joints: No leakage allowed.

c. Where pipeline consists of a combination of welded and gasketed joints, adjust the formula above by the ratio of the joint types over the test section.

9. Polyvinyl Chloride (PCV) pipe:

$$L = \frac{ND(P)^{1/2}}{7,400}$$

L = Allowable leakage in gallons per hour.
N = Number of joints in the length of pipeline to be tested.
D = Nominal diameter of the piping in inches.
P = Test pressure in pounds per square inch gauge.

END OF SECTION

SECTION 16050

ELECTRICAL WORK

PART 1 - GENERAL

1.01 SUMMARY

A. Provide labor, materials, equipment, and incidentals as indicated on the Drawings, specified, and required to complete the electrical work.

B. Equipment shall be rated and labeled by the manufacturer for the environmental conditions in which it is installed including the power disconnects, control stations, and wiring systems.

C. Conduits and circuits within electrical distribution or utilization equipment and cabinets shall be identified and labeled as specified and as shown.

D. System Overview. Detailed requirements are in individual related specification sections.

1. Demolish electrical equipment as indicated on the Drawings.
    a. Power Generator Building and Washwater Pond area
    b. Trickling Filter Electrical Building and Primary Clarifier area
    c. DAFT Area
    d. Dewatering Area
2. Install conduit and conductors as indicated on the Drawings.
    a. Power Generator Building and Washwater Pond area
    b. Trickling Filter Electrical Building and Primary Clarifier area
    c. DAFT Area
    d. Dewatering Area
3. Install equipment, junction boxes, and field instruments as indicated on the Drawings.
    a. Power Generator Building and Washwater Pond area
    b. Trickling Filter Electrical Building and Primary Clarifier area
    c. DAFT Area
    d. Dewatering Area
4. Modify control panels as indicated on the Drawings.
    a. PLC12199
    b. PLC31299
    c. PLC70299
    d. PLC75001

1.02 REFERENCED SECTIONS

A. The following Sections are references in this Section.

1. Section 01330 – Submittals
2. Section 01780 – Record Drawings
3. Section 01782 – Operations and Maintenance Information

1.03 COORDINATION

A. Review installation procedures, drawings and schedules under other Sections and coordinate with other trades the installation of electrical items that must be installed with or within formwork, walls, partitions, ceilings and panels.

B. Responsible for the installation of all conduits, inserts, and other items to be embedded in the concrete, or built into walls, partitions, ceilings or panels constructed by other contractors. Provide other contractors with detailed plans or sketches of the location of said conduits and other built-in items as may be required. Stay fully informed of the construction where conduits and other built-in items are to be installed. Install conduits and other built-in items in such a manner and within such time periods as will not unnecessarily delay the work of the other contractors.

1.04 GENERAL

A. Interpretation of Drawings:

1. Dimensions shown on the Drawings that are related to equipment are based on the equipment of one manufacturer. Confirm the dimensions of the equipment furnished to the space allocated for that equipment.

2. The Drawings show the principal elements of the electrical Work. They are not intended as detailed working drawings for the electrical Work, but as a complement to the Specifications to clarify the principal features of the electrical systems.

3. It is the intent of the Drawings and Specifications that all equipment and devices, furnished and installed under this Contract, be properly connected and interconnected with other equipment and devices so as to render the installations complete for successful operation, regardless of whether all the connections and interconnections are specifically mentioned in the Specifications or shown on the Drawings.

4. It also is the intent of the Contract Documents that similar products are provided by the same manufacturer for uniformity on the Project.

1.05 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies:

1. Permits: Obtain permits and pay fees required to commence Work and, upon completion of the Work, obtain and deliver to the Engineer a Certificate of Inspection and Approval from the authority having jurisdiction.

2. Codes: Material and equipment shall be installed in accordance with the current standards and recommendations of the National Electrical Code, the National Electrical Safety Code and with local codes which apply. Where discrepancies arise between codes, the most restrictive regulation shall apply.

3. Tests by Independent Regulatory Agencies: Electrical material and equipment shall be new and shall bear the label of the Underwriters' Laboratories, Inc., or other nationally-recognized, independent testing laboratory, wherever standards have been established and label service regularly applies.

B. Reference Standards: Electrical material and equipment shall conform in all respects to the latest approved standards of the following:

1. California Administrative Code, Titles 17, 19, 24.

2. National and California Electrical Codes (editions in force)

3. NFPA 70E Standard for Electrical Safety in the Workplace

4. U.L. Electrical Construction Materials List

5. OSHA Rules and Regulations Codes, rules and regulations as applicable and as specified hereinafter.

6. National Electrical Manufacturers Association (NEMA).

7. The American National Standards Institute (ANSI).

8. The Institute of Electrical and Electronic Engineers (IEEE).

9. Insulated Cable Engineers Association (ICEA).

10. National Electrical Safety Code (NESC).

11. American Society for Testing and Materials International (ASTM).

12. The Instrumentation, Systems and Automation Society (ISA).

13. National Fire Protection Agency (NFPA).

14. Underwriter's Laboratories, Inc. (UL).

1.06 SUBMITTALS

A. Refer to Section 01330 for submittal requirements.

B. Include the following information to the extent applicable to the particular item:

1. Manufacturer's name and product designation or catalog number, including environmental rating such as "Rated for Outdoor Use" or "Rated for Hazardous Location".

2. Electrical ratings.

3. Conformance to applicable standards or specifications of ANSI, ASTM, ICEA, IEEE, ISA, NEC, NEMA, NFPA, OSHA, UL, or other organizations.

4. Dimensioned plan, section, elevations and panel layouts showing means for mounting, conduit connection, and grounding.

5. Materials and finish specification, including paints.

6. List of components including manufacturer's names and catalog numbers.

7. Internal wiring diagram and drawings indicating all connections to components and numbered terminals for external connections.

C. Substitution: Only one substitution for each type of equipment or material will be considered.

1.07 PROJECT CLOSEOUT

A. Operation and Maintenance Data: Submit complete manuals including:

1. Furnish Operation and Maintenance Manuals in accordance with the requirements of Section 01782, including:

a. Copies of all Record Drawings and Wiring Diagrams, test reports, maintenance data and schedules, description of operation, and spare parts information.

B. Record Drawings

1. Furnish in accordance with the requirements of Section 01780, including:

a. System Record Drawings: Include the following:

1) One line wiring diagram of the distribution system.

2) Accurate and detailed in place conduit and cable layouts with schedule of conduit sizes and number and size of conductors.

3) Layouts of the power and lighting arrangements and the grounding system.

4) Control schematic diagrams, with terminal numbers and all control devices identified, for all equipment.

b. Point-to-Point Interconnection Wiring Diagram Drawings: Include the following:

1) External wiring for each piece of equipment, panel, instrument and other devices and conduit wiring to control stations, lighting panels and motor controllers.

2) Numbered terminal block identification for each wire termination.

3) Identification of the assigned wire numbers for interconnections.

4) Identification of conduit wiring by the conduit tag in which the wire is installed.

5) Terminal and pull boxes through which wiring is routed.

6) Identification of all equipment and the Shop Drawing transmittal numbers for equipment from which the wiring requirements and termination information was obtained.

2. The Record Drawings shall reflect final equipment and field installation information.

3. During the progress of the work, maintain at least one set of up-to-date record drawings which shall be the conformed project drawings with annotations by the Contractor recording all deviations from the plans.

1.08 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery and Storage of Materials:

1. Instruct the manufacturers and vendors as to the maximum shipping sizes of equipment that can be accommodated at the site.

2. Make all arrangements for transportation, delivery and handling of equipment and materials required for prosecution and completion of the Work.

3. Shipments of materials to Contractor or subcontractors shall be delivered to the site only during regular working hours and shall conform to the requirements of the Contractor's Hazardous Materials Management Program. Shipments shall be addressed and consigned to the proper party giving name of Project, street number and city. Shipments shall not be delivered to Owner.

4. If necessary to move stored materials and equipment during construction, move materials and equipment without any additional compensation.

5. When practical, factory assemble products. Matchmark or tag separate parts and assemblies to facilitate field assembly. Cover machined and unpainted parts that may be damaged by the elements with a strippable protective coating.

6. Package products to facilitate handling and protect from damage during shipping, handling, and storage. Mark or label outside of each package or crate to indicate its purchase order number, bill of lading number, contents by name, Owner's contract name and number, Contractor, equipment number, and approximate weight. Include complete packing lists and bills of materials with each shipment.

7. Protect products from exposure to the elements and keep thoroughly dry and dust free at all times. Protect painted surfaces against impact, abrasion, discoloration, or other damage. Grease or oil all bearings and similar items.

8. Do not have products shipped until:

   a. Related Shop Drawings have been approved by Engineer.

   b. Related factory test results, required in the individual Specification Sections, have been reviewed and accepted by Engineer.

   c. Required storage facilities have been provided.

9. Items shall be supported, packaged and stored in such a way so as not to impose undue stress/forces to couplings, connections, supports, valves, equipment and instruments.

10. Arrange deliveries of products in accordance with construction schedules and in ample time to facilitate inspection prior to installation.

11. Coordinate deliveries to avoid conflict with Work and conditions on site and to accommodate the following:

   a. Work of other contractors, or Owner.

   b. Limitations of storage space.

   c. Availability of equipment and personnel for handling products.

   d. Owner's use of premises.

12. Immediately on delivery, inspect shipment to assure:

   a. Product complies with requirements of Contract Documents and approved submittal.

   b. Quantities are correct.

   c. Containers and packages are intact, and labels are legible.

   d. Products are properly protected and undamaged.

   e. Verify that the accelerometer recordings were made during shipment.

13. Promptly remove damaged products from the Project site and expedite delivery of new undamaged products, and remedy incomplete or lost products to provide that specified, so as not to delay progress of the Work.

B. Handling of Materials:

1. Provide equipment and personnel necessary to handle products, including those provided by Owner, by methods to prevent soiling or damage to products or packaging.

2. Provide additional protection during handling as necessary to prevent scraping, marring or otherwise damaging products or surrounding surfaces.

3. Handle products by methods to prevent bending or overstressing.

4. Lift heavy components only at designated lifting points.

5. Materials and equipment shall at all times be handled in a safe manner and as recommended by manufacturer or supplier so that no damage will occur to them. Do not drop, roll or skid products off delivery vehicles. Hand carry or use suitable materials handling equipment.

1.09 JOB CONDITIONS

A. Existing Conditions:

1. Examine the site and existing facilities in order to compare them with the Contract Documents with respect to the conditions of the premises, location of and connection to existing facilities and any obstructions which may be encountered.

2. Perform the Work with due regard to safety and in a manner that will not interfere with the existing equipment or in any way cause interruption of any of the functions of the plant.

3. Work shall be carried out with a minimum amount of disruption to the operation of the existing lift station and with prior approval of Owner. Submit for approval by Owner, a detailed written procedure for work which affects operation of the existing lift station, a detailed procedure for modifying any existing electrical equipment, including appropriate Personal Protective Equipment (PPE) required if equipment must remain energized while conducting work, anticipated time required to complete the Work, and the required shutdown time, if any.

4. Where the Work of Contractor ties in with existing installations, take prior precautions and safeguards in connecting the Work with the existing operating circuits so as to prevent any interruption to the existing operating circuits. The tying in of Work, installed under this Contract, with the existing circuits shall be performed only in the presence of Owner. Advance notice will be required before any equipment is removed from service. Notify Owner, in writing, of his intention to do such work, providing full details.

1.10 CONTROL CABINETS AND PANELS

A. All outdoor panels, with electronics and temperature sensitive instruments, shall be provided with sunshade structures. Sunshade structures shall be constructed as shown on drawings.

B. All control cabinet and panel materials shall be as follows, unless otherwise specified or noted on the Drawings.

C. Provide the following types of enclosures:

1. All indoor locations: NEMA 12 - painted steel.

2. All outdoor locations: NEMA 4X - 316 stainless steel.

3. All explosion proof locations, NEMA 7.

D. Provide the following enclosure features:

1. UL/NEMA 12 Enclosures: (Not Applicable)

2. UL/NEMA 4X Enclosures:

a. Provide enclosures with Type 316 stainless steel construction. Wall or floor mounted enclosures fabricate using a minimum 14 gage steel. Free standing enclosures fabricate using a minimum 12 gage steel. Enclosures smaller than 14”x 12”x 6” fabricate using a minimum of 16 gage steel. Keep steel free of pitting and surface blemishes. Provide all surfaces with a smooth brushed finish.

b. Provide stainless steel fast-operating clamp assemblies on three sides of each door.

c. Rolled lip around three sides of door and along top of enclosure opening.

d. Provide a hasp and staple for padlocking.

e. Provide 3-inch high channel base assembly, with solid bottom, drilled to mate the panel to its floor pad for free-standing panel.

f. Provide 5/16-inch diameter copper ground studs for the ground connection points for all panel equipment and panel doors.

g. Product and Manufacturer: Provide one of the following:

1) Hoffman/Pentair

2) Or equal

3. UL/NEMA 7 Enclosures (Not Applicable)

1.11 ELECTRICAL EQUIPMENT

A. All electrical equipment shall be capable of operating successfully at full-rated load, without failure, with an ambient outside air temperature range of 10°F to 115°F and an elevation of 630 feet (MSL).

B. All electrical devices and equipment shall have ratings based on 75°C terminations.

1.12 AREA CLASSIFICATIONS

A. Materials and equipment shall conform to the area classification(s) shown on the Drawings, specified and required.

B. Wet/Corrosive Locations: The following areas shall be considered wet/corrosive locations:

1. All outdoor areas.

2. All indoor areas below grade, unless otherwise specified.

3. Indoor areas above grade where shown on the Drawings.

4. Chemical containment and storage areas.

5. Dewatering room.

C. Hazardous Locations:

1. DAFT Basin: Class 1, Division 2: 18-inches above water level. 18-inch beyond and above basin wall. 18-inch high by 10-feet horizontal boundary beyond basin wall.

1.13 VERIFICATION OF DIMENSIONS

A. All scaled and figured dimensions are approximate and are given for estimating purposes only. Before proceeding with the work, carefully check and verify all dimensions and sizes and assume all responsibility for the fitting of materials and equipment to other parts of the equipment and to the structure. Where apparatus and equipment are indicated on the drawings, dimensions are taken from typical equipment of the class indicated. Carefully check drawings to see that the equipment contemplated for installation will fit into the spaces provided.

1.14 SUPERVISION OF ELECTRICAL WORK

A. Contractor shall personally, or through an authorized and competent representative, constantly supervise the work from beginning to completion and final acceptance. So far as possible, keep same foreman and workmen throughout the project duration. Work shall be subject to inspection and approval by Engineer. Promptly furnish related information when so requested by Engineer.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 16070

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Support, anchorage, and attachment components.

B. Fabricated metal equipment support assemblies.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 01612 – Seismic Design Criteria
2. Section 03300 – Cast-in-Place Concrete
3. Section 05500 – Miscellaneous Metals
4. Section 09960 – High-Performance Coatings
5. Section 16130 – Raceways and Boxes for Electrical Systems

1.03 REFERENCE STANDARDS

A. American Institute of Steel Construction: Allowable Stress Design (ASD).

B. NSF/ANSI/3-A SSI 14159-1 - Hygiene Requirements for the Design of Meat and Poultry Processing Equipment.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:
    a. Slotted support systems, hardware, and accessories.
    b. Clamps.
    c. Hangers.
    d. Sockets.
    e. Eye nuts.
    f. Fasteners.
    g. Anchors.
    h. Saddles.
    i. Brackets.
2. Include rated capacities and furnished specialties and accessories.
3. Rated Capacities: Calculated in accordance with AISC ASD, Section F1 or allowable stress equal to 60 percent of material's yield stress. Professional Engineer certified/stamped load ratings with a recommended safety factor of 2.

B. Shop Drawings: For fabrication and installation details for electrical hangers and support systems.

1. Hangers. Include product data for components.

2. Slotted support systems.

3. Equipment supports.

4. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment. Include adjustable motor bases, rails, and frames for equipment mounting.

C. Delegated Design Submittal: For hangers and supports for electrical systems.

1. Include design and load calculations and details of hangers.

2. Include design calculations for seismic restraints.

1.05 INFORMATIONAL SUBMITTALS

A. Welding certificates.

B. Manufacturer's Certificates of Conformance: Certifying products meet or exceed specification requirements.

1.06 QUALITY ASSURANCE

A. Hygienic Area Certifications: Certification of NSF/ANSI/3-A SSI 14159-1 and material compatibility with 21 CFR 177. Applies to PVC-encased all-thread stainless rod, riser/floor stands, tented and flat slotted support members.

PART 2 - PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified structural professional engineer to design hanger and support system.

B. Surface-Burning Characteristics: Comply with ASTM E84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame Rating: Class 1.

2. Self-extinguishing in accordance with ASTM D635.

C. Structural Performance: Hangers and supports for piping and equipment must withstand the effects of gravity loads and stresses within limits and under conditions indicated in accordance with ASCE/SEI 7.

1. Design supports capable of supporting combined weight of supported electrical systems and system contents.

2. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

3. Design seismic-restraint hangers and supports for electrical system and obtain approval from authorities having jurisdiction.

2.02 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Stainless Steel Slotted Support Systems: Preformed stainless-steel channels and angles with minimum 13/32 inch diameter holes at a maximum of 8 inch on center in at least one surface.

1. Basis-of-Design Product: Subject to compliance with requirements, provide Rocket Rack, a unit of Robroy Industries or comparable product by one of the following:

a. Eaton (B-line).

b. Flex-Strut Inc.
c. Gripple Inc.
d. G-Strut.
e. Haydon Corporation.
f. MIRO Industries.
g. nVent (CADDY).
h. Rocket Rack, a unit Robroy Industries.
i. Wesanco, Inc.

2. Standard: Comply with MFMA-4 factory-fabricated components for field assembly.

3. Material for Channel, Fittings, and Accessories: Stainless steel, Type 316.

4. Channel Width: 1-5/8 inch.

B. Hygienic Area, Slotted, Horizontal Support Systems: (Not Applicable)

C. Hygienic Area, Slotted, Vertical Framing Systems: (Not Applicable)

D. Steel Slotted Support Systems: (Not Applicable)

E. Aluminum Slotted Support Systems: (Not Applicable)

F. Nonmetallic Slotted Support Systems: (Not Applicable)

G. Conduit and Cable Support Devices: Stainless steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

H. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for nonarmored electrical conductors or cables in riser conduits. Plugs must have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body must be made of malleable iron.

I. Structural Steel for Fabricated Supports and Restraints: ASTM A36/A36M steel plates, shapes, and bars; black and galvanized.

J. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.

a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1) Hilti, Inc.
2) ITW Ramset/Red Head; Illinois Tool Works, Inc.
3) MKT Fastening, LLC.
4) Simpson Strong-Tie Co., Inc.

2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.

1) Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a) Eaton (B-line).
b) Empire Tool and Manufacturing Co., Inc.
c) Hilti, Inc.

d) ITW Ramset/Red Head; Illinois Tool Works, Inc.

e) MKT Fastening, LLC.

3. Concrete Inserts: Steel or malleable-iron, slotted support system units are similar to MSS Type 18 units and comply with MFMA-4 or MSS SP-58.

4. Clamps for Attachment to Steel Structural Elements: MSS SP-58 units are suitable for attached structural element.

5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM F3125/F3125M, Grade A325.

6. Toggle Bolts: Stainless steel springhead type.

7. Hanger Rods: Threaded steel.

2.03 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

A. Description: Welded or bolted structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.

B. Materials: Comply with requirements in Section 05500 for steel shapes and plates.

PART 3 - EXECUTION

3.01 SELECTION

A. Comply with the following standards for selection and installation of hangers and supports, except where requirements on Drawings or in this Section are stricter:

1. NECA NEIS 101

2. NECA NEIS 102.

3. NECA NEIS 105.

4. NECA NEIS 111.

B. Comply with requirements for firestopping materials and installation for penetrations through fire-rated walls, ceilings, and assemblies.

C. Comply with requirements for raceways and boxes specified in Section 16130.

D. Maximum Support Spacing and Minimum Hanger Rod Size for Raceways: Space supports for EMT, IMC, and ERMC as required by NFPA 70. Minimum rod size must be 1/4 inch in diameter.

E. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted or other support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

1. Secure raceways and cables to these supports with single-bolt conduit clamps.

F. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2 inch and smaller raceways serving branch circuits and communication systems above suspended ceilings, and for fastening raceways to trapeze supports.

3.02 INSTALLATION OF SUPPORTS

A. Comply with NECA NEIS 101 for installation requirements except as specified in this article.

B. Raceway Support Methods: In addition to methods described in NECA NEIS 1, EMT, IMC and ERMC may be supported by openings through structure members, in accordance with NFPA 70.

C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination must be weight of supported components plus 200 lb.

D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.
2. To New Concrete: Bolt to concrete inserts.
3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
4. To Existing Concrete: Expansion anchor fasteners.
5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inch thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inch thick.
6. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts, Beam clamps (MSS SP-58, Type 19, 21, 23, 25, or 27), complying with MSS SP-69.
7. To Light Steel: Sheet metal screws.
8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that comply with seismic-restraint strength and anchorage requirements.

E. Drill holes for expansion anchors in concrete at locations and to depths that avoid the need for reinforcing bars.

3.03 INSTALLATION OF FABRICATED METAL SUPPORTS

A. Comply with installation requirements in Section 05500 for site-fabricated metal supports.

B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

C. Field Welding: Comply with AWS D1.1/D1.1M. Submit welding certificates.

3.04 CONCRETE BASES

A. Construct concrete bases of dimensions indicated, but not less than 4 inch larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.

B. Use 3000 psi, 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Section 03300.

C. Anchor equipment to concrete base as follows:

1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor bolts to elevations required for proper attachment to supported equipment.

3. Install anchor bolts in accordance with anchor-bolt manufacturer's written instructions.

3.05 PAINTING

A. Touchup:

1. Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

a. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.

2. Comply with requirements in Section 09960 for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.

B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A780.

END OF SECTION

SECTION 16121

CONTROL (INSTRUMENTATION) CABLE

PART 1 - GENERAL

1.01 DESCRIPTION

A. Provide labor, materials, equipment and incidentals as shown on the Drawings, specified and required to furnish and install instrumentation cables.

B. Section includes:

1. Shielded cable (Instrumentation and Ethernet)

1.02 REFERENCED SECTIONS

A. Section 01330 – Submittals

B. Section 16050 – Electrical Work

1.03 SUBMITTALS

A. Refer to Section 01330 for submittal requirements.

B. Shop Drawings: Submit for approval the following:

1. Manufacturer’s catalog cuts and technical information for cable products proposed for use.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Refer to Section 16050 for requirements related to transporting, handling, storing, and protecting products.

B. Accept identification products on site in original containers. Inspect for damage.

C. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.

D. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

PART 2 - PRODUCTS

2.01 SHIELDED CABLE

A. Single shielded pair cable:

1. Tinned copper, nineteen strand, PVC insulated conductors, No. 16 AWG minimum, twisted with aluminum-polyester shield, stranded tinned 16 AWG copper drain wire and PVC black or gray outer jacket. Wire conductor colors shall be black (-neg) and red (+pos). 600 Volt Tray Cable (TC) rated.

2. Manufacturers:

a. Belden Company (No. 9342).

b. Okonite Company.

c. Dekoron Wire and Cable Company.

d. Substitutions: Permitted.

B. Ethernet cable:

1. Cable shall have Category 6 direct burial rating; 23 AWG solid bare copper; 4 pairs; shielded; support PoE++; color coded per ethernet industry standards.
2. Cable shall be finished with a black polyethylene jacket.
3. Cable core shall be filled with a water proofing compound.
4. Manufacturers:
   a. Belden Company.
   b. Substitutions: Permitted.

PART 3 - EXECUTION

3.01 PREPARATION

A. Mandrel and swab all conduits 2” and larger after conduit installation.

B. Complete raceway installation prior to conductor installation.

3.02 EXISTING WORK

A. Remove exposed abandoned wire and cable. Patch surfaces where removed cables pass through building finishes.

B. Disconnect abandoned cables and remove cable. Remove abandoned boxes when cable servicing boxes is abandoned and removed. Install blank cover for abandoned boxes not removed.

3.03 INSTALLATION

A. Instrumentation Cables shall not be installed within the same conduits, raceways or cable trays with cables having voltage at or above 120VAC.

B. Install all cables complete with proper identification and terminations at both ends. Cable outer installation shall be dressed at the end of the cables with heat shrink tubing prior to terminations. Utilizing electrical tape is not allowed for dressing.

C. Ground shield of shielded cables at one end only and as recommended by instrument manufacturer. When multiple shielded cables are terminated on a designated analog terminal strip an insulated green with yellow strip wire is used to jumper between the shield terminals and at the end of the terminal strip terminate the shields to the isolated DC ground bar mounted in the panel.

D. Install in conformance with the National Electrical Code.

E. Each cable and conductor shall be identified in each pull box and manhole with identification markers, which shall include the conduit number and/or cable number. The markers shall be self-laminating vinyl on white background and shall be printed using a Brady "XC Plus" printer or equal.

3.04 TESTING

A. Test shielded instrumentation cable shields with an ohmmeter for continuity along the full length of the cable and for shield continuity to ground. The tests shall be witnessed by the Owner and Engineer.

B. Connect shielded instrumentation cables to a calibrated 4 to 20 mADC signal transmitter and receiver. Test at 4, 12 and 20 milliamp transmitter settings.

END OF SECTION

SECTION 16122

600 VOLT CABLE

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Building wire and cable; VFD cable; and wiring connectors and connections.

1.02 REFERENCED SECTIONS

A. Section 01330 – Submittals

B. Section 16050 – Electrical Work

C. Section 16195 – Identification for Electrical Systems

1.03 REFERENCES

A. International Electrical Testing Association:

1. NETA ATS – Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

B. National Fire Protection Association:

1. NFPA 70 - National Electrical Code.

2. NFPA 262 - Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces.

C. Underwriters Laboratories, Inc.:

1. UL 1277 - Standard for Safety for Electrical Power and Control Tray Cables with Optional Optical-Fiber Members.

1.04 SYSTEM DESCRIPTION

A. Product Requirements: Provide products as follows:

1. Stranded conductors are required for all feeders and branch circuits.

2. Stranded conductors are required for control circuits.

3. Conductors shall not be smaller than 12 AWG for power and lighting circuits.

4. Conductor shall not be smaller than 14 AWG for control circuits.

B. Wiring Methods: Provide the following wiring methods:

1. Dry Interior Locations: Use only building wire, Type XHHW-2 insulation in raceway.

2. Wet or Damp Interior Locations: Use only building wire, Type XHHW-2 insulation, in raceway.

3. Exterior Locations: Use only building wire, Type XHHW-2 insulation, in raceway.

1.05 DESIGN REQUIREMENTS

A. Conductor sizes are based on copper.

1.06 SUBMITTALS

A. Refer to Section 01330 for submittal requirements.

B. Product Data: Submit cutsheets and manufacturer data for all conductor sizes and types proposed for use on this project.

C. Test Reports: Indicate procedures and values obtained.

1.07 CLOSEOUT SUBMITTALS

A. Project Record Documents: Record actual locations of components and circuits.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Refer to Section 16050 for requirements related to transporting, handling, storing, and protecting products.

B. Accept identification products on site in original containers. Inspect for damage.

C. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.

D. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.09 QUALITY ASSURANCE

A. Provide wiring materials located in plenums with peak optical density not greater than 0.5, average optical density not greater than 0.15, and flame spread not greater than 5 feet (1.5 m) when tested in accordance with NFPA 262.

1.10 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

1.11 FIELD MEASUREMENTS

A. Verify field measurements are as indicated on Drawings.

1.12 COORDINATION

A. Where wire and cable destination is indicated and routing is not shown, determine routing and lengths required.

B. Wire and cable routing indicated is approximate unless dimensioned.

PART 2 - PRODUCTS

2.01 BUILDING WIRE

A. Manufacturers:

1. Aetna Insulated Wire, Inc.
2. Cerro Wire LLC.
3. Encore Wire Corporation.
4. General Cable; Prysmian Group North America.
5. Southwire Company.

B. Substitutions: Or equal.

C. Product Description: Single conductor insulated wire. Multi conductor cable shall only be utilized in cable tray applications or unless specified on drawings.

D. Conductor: Copper.

E. Insulation Voltage Rating: 600 volts.

F. Insulation Temperature Rating: 90°C – dry; 75°C - wet.

G. Insulation Material: Thermoplastic/Thermosetting.

2.02 WIRING CONNECTORS

A. Split Bolt Connectors:

1. Manufacturers:

a. ABB, Electrification Business.

b. Burndy; brand of Hubbell Electrical Solutions; Hubbell Incorporated.

c. ILSCO.

2. Substitutions: Or equal.

B. Solderless Pressure Connectors:

1. Manufacturers:

a. 3M.

b. Ideal Industries, Inc.

2. Substitutions: Or equal.

C. Spring Wire Connectors: (NOT PERMITTED)

D. Compression Connectors:

1. Manufacturers:

a. ABB, Electrification Business.

b. Burndy; brand of Hubbell Electrical Solutions; Hubbell Incorporated.

c. Ideal Industries, Inc.

d. Leviton Manufacturing Co., Inc.

2. Substitutions: Or equal.

2.03 TERMINATIONS

A. Terminal Lugs for Wires 6 AWG and Smaller: Solderless, compression type copper.

B. Lugs for Wires 4 AWG and Larger: Color keyed, compression type copper, with insulating sealing collars.

2.04 VFD CABLE

A. Manufacturers:

1. Southwire Company Spec 45442.

B. Substitutions: Or equal.

C. Product Description: VFD Flexible cable

D. Conductor: Tinned annealed copper.

E. Insulation Voltage Rating: 600 volts.

F. Insulation Temperature Rating: 90°C.

G. Insulation Material: Cross linked insulation on all conductors (XHHW-2).

H. Ground: One green ground with yellow stripe cross linked insulation (size equal to phase conductor).

I. Drain Wire: tinned copper drain wire.

J. Shielding: 100% coverage aluminum/mylar/aluminum foil, overall 85% coverage tinned copper braid.

K. Jacket: Black thermoplastic elastomer (TPE).

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify interior of building has been protected from weather.

B. Verify mechanical work likely to damage wire and cable has been completed.

C. Verify raceway installation is complete and supported.

3.02 PREPARATION

A. Completely and thoroughly swab raceway before installing wire.

3.03 EXISTING WORK

A. Remove exposed abandoned wire and cable, including abandoned wire and cable above accessible ceiling finishes. Patch surfaces where removed cables pass through building finishes.

B. Disconnect abandoned circuits and remove circuit wire and cable. Remove abandoned boxes when wire and cable servicing boxes is abandoned and removed. Install blank cover for abandoned boxes not removed.

C. Provide access to existing wiring connections remaining active and requiring access. Modify installation or install access panel.

D. Extend existing circuits using materials and methods compatible with existing electrical installations, or as specified, whichever is the more stringent requirement.

E. Clean and repair existing wire and cable remaining or wire and cable to be reinstalled.

3.04 INSTALLATION

A. Route wire and cable to meet Project conditions.

B. Neatly train and lace wiring inside boxes, equipment, and panelboards.

C. Identify and color code wire and cable under provisions of Section 16195. Identify each conductor with its circuit number or other designation indicated.

D. Special Techniques--Building Wire in Raceway:

1. Pull conductors into raceway at same time.

2. Install conductors 4 AWG and larger with pulling equipment.

E. Special Techniques - Wiring Connections:

1. Clean conductor surfaces before installing lugs and connectors.

2. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.

3. Tape uninsulated conductors and connectors with electrical tape to 150 percent of insulation rating of conductor.

4. Install split bolt connectors for copper conductor splices and taps, 6 AWG and larger.

5. Install solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.

F. Install stranded conductors for branch circuits 10 AWG and smaller. Install crimp on fork terminals for device terminations. Do not place bare stranded conductors directly under screws.

G. Install terminal lugs on ends of 600 volt wires unless lugs are furnished on connected device, such as circuit breakers.

H. Size lugs in accordance with manufacturer's recommendations terminating wire sizes. Install 2-hole type lugs to connect wires 4 AWG and larger to copper bus bars.

I. For terminal lugs fastened together such as on motors, transformers, and other apparatus, or when space between studs is small enough that lugs can turn and touch each other, insulate for dielectric strength of 2-1/2 times normal potential of circuit.

3.05 WIRE COLOR

A. General:

1. For wire sizes 10 AWG and smaller, install wire colors in accordance with the following:

a. Black and red for single phase circuits at 120/240 volts.

b. Black, red, and blue for circuits at 120/208 volts single or three phase.

c. Brown, orange, and yellow for circuits at 277/480 volts single or three phase.

2. For wire sizes 8 AWG and larger, identify wire with colored tape at terminals, splices and boxes. Colors are as follows:

a. Black and red for single phase circuits at 120/240 volts.

b. Black, red, and blue for circuits at 120/208 volts single or three phase.

c. Brown, orange, and yellow for circuits at 277/480 volts single or three phase.

B. Neutral Conductors: White. When two or more neutrals are located in one conduit, individually identify each with proper circuit number.

C. Branch Circuit Conductors: Install three or four wire home runs with each phase uniquely color coded.

D. Feeder Circuit Conductors: Uniquely color code each phase.

E. Ground Conductors:

1. For 6 AWG and smaller: Green.

2. For 4 AWG and larger: Identify with green tape at both ends and visible points including junction boxes.

3.06 FIELD QUALITY CONTROL

A. Inspect and test in accordance with NETA ATS, except Section 4.

B. Perform inspections and tests listed in NETA ATS, Section 7.3.1.

END OF SECTION

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SECTION 16130

RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Metal conduits and fittings.

B. Nonmetallic conduits and fittings.

C. Metal wireways and auxiliary gutters.

D. Nonmetal wireways and auxiliary gutters.

E. Surface raceways.

F. Boxes, enclosures, and cabinets.

G. Handholes and boxes for exterior underground cabling.

1.02 REFERENCED SECTIONS:

A. Section 01330 – Submittals

B. Section 16050 – Electrical Work.

C. Section 16070 – Hangers and Supports for Electrical Systems

1.03 DEFINITIONS

A. ARC: Aluminum rigid conduit.

B. GRC: Galvanized rigid steel conduit.

C. IMC: Intermediate metal conduit.

1.04 ACTION SUBMITTALS

A. Refer to Section 01330 for submittal requirements.

B. Product Data: Submit for the following:

1. Metallic conduit.
2. Liquidtight flexible metal conduit.
3. Raceway fittings.
4. Conduit bodies.
5. Outlet boxes.
6. Pull and junction boxes.

C. Manufacturer's Installation Instructions: Submit application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of Product.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Refer to Specification Section 16050 for environmental conditions affecting products on site.

PART 2 - PRODUCTS

2.01 METAL CONDUITS AND FITTINGS

A. Metal Conduit:

1. Listing and Labeling: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
2. GRC Conduit, Elbows, Couplings, and Nipples: (NOT PERMITTED)
3. ARC: (NOT PERMITTED)
4. IMC: (NOT PERMITTED)
5. PVC-Coated Steel Conduit: PVC-coated rigid steel conduit.
   a. Basis-of-Design Product: Subject to compliance with requirements, provide products by one of the following:
      1) Korkap.
      2) Perma-Cote.
      3) Plasti-Bond.
      4) Substitutions: Or equal.
   b. Comply with ANSI C80.1, ETL PVC-001, NEMA RN 1, and UL 6.
   c. Coating Thickness: 0.040 inch, minimum.
   d. A "PVC Coated Sealing Locknut" shall be used on all exposed male threads transitioning into female NPT threads which do not have sealing sleeves, including transitions from PVC couplings/female adapters to PVC coated GRC elbows in direct burial applications. "PVC Coated Sealing Locknuts" are not to be used in place of a conduit hub.
6. EMT: (NOT PERMITTED)
7. FMC: (NOT PERMITTED)

B. Metal Fittings:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Crouse Hinds by EATON.
   b. O-Z/Gedney; a brand of Emerson Industrial Automation.
   c. Patriot Aluminum Products, LLC.
   d. Picoma Industries, Inc.
   e. Thomas & Betts Corporation; A Member of the ABB Group.
2. Comply with NEMA FB 1 and UL 514B.
3. Listing and Labeling: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
4. Fittings, General: Listed and labeled for type of conduit, location, and use.
5. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 1203 and NFPA 70.

6. Expansion Fittings: PVC or steel to match conduit type, complying with UL 651, rated for environmental conditions where installed, and including flexible external bonding jumper.

7. Coating for Fittings for PVC-Coated Conduit: Minimum thickness of 0.040 inch (1 mm), with overlapping sleeves protecting threaded joints.

8. PVC-Coated Fittings:

   a. Basis-of-Design Product: Subject to compliance with requirements, provide products by one of the following:

      1) Korkap.

      2) Perma-Cote.

      3) Plasti-Bond.

   b. Fittings shall be Form 8 with a V-Seal tongue-in-groove gasket and supplied with plastic encapsulated stainless steel cover screws. Form 8 fittings shall be UL Type 4X listed and IEC IP69 certified. Fittings shall be from the same manufacturer as the conduit in order to maintain system continuity and warranty. PVC Coated fittings for hazardous locations must be UL 1203 listed.

C. Joint Compound for PVC coated GRS: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

2.02 BOXES, ENCLOSURES, AND CABINETS

A. Basis-of-Design Product: Subject to compliance with requirements, provide boxes, enclosures, and cabinets, by one of the following:

1. Attabox

2. Crouse-Hinds, an Eaton business.

3. EGS/Appleton Electric.

4. Erickson Electrical Equipment Company.

5. FSR Inc.

6. Hoffman; a brand of Pentair Equipment Protection.

7. Hubbell Incorporated.

8. Hubbell Incorporated; Wiring Device-Kellems.

9. Kraloy.

10. Milbank Manufacturing Co.

11. MonoSystems, Inc.

12. Oldcastle Enclosure Solutions.

13. O-Z/Gedney; a brand of Emerson Industrial Automation.

14. Plasti-Bond.

15. RACO; Hubbell.

16. Spring City Electrical Manufacturing Company.

17. Stahlin Non-Metallic Enclosures.

18. Thomas & Betts Corporation; A Member of the ABB Group.

19. Topaz Electric; a division of Topaz Lighting Corp.

20. Wiremold / Legrand.

21. Substitutions: Or equal.

B. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.

C. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.

D. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, ferrous alloy, Type FD, with gasketed cover.

E. Metal Floor Boxes: (Not Applicable)

F. Nonmetallic Floor Boxes: (Not Applicable)

G. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

H. Cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1 and UL 1773, cast aluminum, galvanized, cast iron with gasketed cover.

I. Box extensions used to accommodate new building finishes shall be of same material as recessed box.

J. Device Box Dimensions: 4 inches square by 2-1/8 inches deep, 4 inches by 2-1/8 inches by 2-1/8 inches deep.

K. Gangable boxes are prohibited.

L. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, Type 12, Type 3R, Type 4X (as indicated on the Drawings or elsewhere in Division 16) with continuous-hinge cover with flush latch unless otherwise indicated.

1. Type 4X Metal Enclosures: 316 Stainless Steel.

PART 3 - EXECUTION

3.01 RACEWAY APPLICATION

A. Outdoors: Apply raceway products as specified below unless otherwise indicated:

1. Exposed Conduit: PVC coated rigid steel.

2. Concealed Conduit, Aboveground: (Not applicable)

3. Underground Conduit: Schedule 40 PVC conduit or PVC coated rigid steel.

4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.

5. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R, or Type 4X as indicated elsewhere.

B. Indoors (non-classified areas):

1. Exposed Conduit: PVC coated rigid steel.

2. Concealed Conduit, Aboveground: (Not applicable)

3. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.

4. Boxes and Enclosures, Aboveground: NEMA 250, NEMA/UL Type 12, or Type 4X as indicated elsewhere.

C. Minimum Raceway Size: 3/4-inch trade size.

D. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. GRC: (Not Applicable)

2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with this type of conduit. Patch and seal all joints, nicks, and scrapes with PVC touch-up compound after installing conduits and fittings. Use sealant recommended by fitting manufacturer and apply in thickness and number of coats recommended by manufacturer. All installers shall be certified by the manufacturer and be able to present a valid unexpired installer certification card prior to installation beginning.

3.02 INSTALLATION

A. Comply with requirements in Section 16070 for hangers and supports.

B. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.

C. Do not install raceways or electrical items on any "explosion-relief" walls or rotating equipment.

D. Do not fasten conduits onto the bottom side of a metal deck roof.

E. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

F. Complete raceway installation before starting conductor installation.

G. Arrange stub-ups so curved portions of bends are not visible above finished slab.

H. Install no more than the equivalent of three 90-degree bends in any conduit run except for control wiring conduits, for which fewer bends are allowed. Support within 12 inches (300 mm) of changes in direction.

I. Make bends in raceway using large-radius preformed ells. Field bending shall be according to NFPA 70 minimum radii requirements. Use only equipment specifically designed for material and size involved.

J. Conceal conduit within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.

K. Support conduit within 12 inches (300 mm) of enclosures to which attached.

L. Raceways Embedded in Slabs: (Not Applicable)

M. Stub-Ups to Above Recessed Ceilings: (Not Applicable)

N. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.

O. Coat field-cut threads on PVC-coated raceway with a corrosion-preventing conductive compound prior to assembly.

P. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.

Q. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch (35-mm) trade size and insulated throat metal bushings on 1-1/2-inch (41-mm) trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.

R. Install raceways square to the enclosure and terminate at enclosures with locknuts. Install locknuts hand tight plus 1/4 turn more.

S. Do not rely on locknuts to penetrate nonconductive coatings on enclosures. Remove coatings in the locknut area prior to assembling conduit to enclosure to assure a continuous ground path.

T. Cut conduit perpendicular to the length. For conduits 2-inch (53-mm) trade size and larger, use roll cutter or a guide to make cut straight and perpendicular to the length.

U. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.

V. Install raceway sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings according to NFPA 70.

W. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all raceways at the following points:

1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
2. Where an underground service raceway enters a building or structure.
3. Conduit extending from interior to exterior of building.
4. Conduit extending into pressurized duct and equipment.
5. Conduit extending into pressurized zones that are automatically controlled to maintain different pressure set points.
6. Where otherwise required by NFPA 70.

X. Comply with manufacturer's written instructions for solvent welding RNC and fittings.

Y. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 36 inches of flexible conduit for equipment subject to vibration, noise transmission, or movement; and for transformers and motors. Use LFMC in damp or wet locations.

Z. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to bottom of box unless otherwise indicated.

AA. Locate boxes so that cover or plate will not span different building finishes.

BB. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.

3.03 PROTECTION

A. Protect coatings, finishes, and cabinets from damage and deterioration.

1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION

SECTION 16132

FLEXIBLE CONDUITS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Provide labor, materials, equipment and incidentals as shown on the Drawings, specified and required to furnish and install flexible metallic conduit and fittings.

1.02 RELATED SECTIONS:

A. Section 01330 – Submittals

B. Section 16050 – Electrical Work.

1.03 QUALITY ASSURANCE

A. Reference Standards: Comply with applicable provisions and recommendations of the following, except where otherwise shown or specified.

1. UL Standard No. 360, Liquid-Tight Flexible Steel Conduit.

1.04 SUBMITTALS

A. Refer to Section 01330 for submittal requirements.

B. Shop Drawings: Submit the following for approval:

1. Manufacturer's catalog cuts and technical information for flexible conduit and fittings proposed for use.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Refer to Specification Section 16050 for environmental conditions affecting products on site.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Flexible Conduit (Non-hazardous Areas):

1. Material: Flexible galvanized steel core with smooth, abrasion resistant, liquid-tight, polyvinyl chloride cover and color to be black. Continuous copper ground built in for sizes 3/4-inch through 1-1/4-inch. Material shall be UL listed.

2. Product and Manufacturer: Provide one of the following:

a. Sealtite UA by Anaconda Metal Hose Division, Anaconda American Brass Company.

b. Liquatite Type L.A. by Electric-Flex Company.

c. Or equal.

B. Flexible Conduit (Class 1, Group D, Division 1, Hazardous Areas):

1. Material: Flexible brass inner core with bronze outer braid. Steel, brass or bronze end fittings. Minimum of 12-inches in length.

2. Product and Manufacturer: Provide one of the following:

   a. Type ECGJH or ECLK by Crouse Hinds Company.
   b. Type EXGJH or EXLK by Appleton Electric Company.
   c. Or equal.

C. Flexible Conduit Fittings:

1. Material and Construction: Malleable iron with zinc electroplating finish. Fittings shall adapt the conduit to standard threaded connections, shall have an inside diameter not less than that of the corresponding standard conduit size and shall be UL listed.

2. Product and Manufacturer: Provide one of the following:

   a. Crouse-Hinds Company.
   b. Appleton Electric Company.
   c. Or equal.

D. PVC Coated Conduit Fittings:

1. Material and Construction: Malleable iron with standard finish and 40-mil PVC exterior coating. Fittings shall adapt the conduit to standard threaded connections, shall have an inside diameter not less than that of the corresponding standard conduit size.

2. Use: Provide on flexible conduit in areas designated as corrosive locations.

3. Product and Manufacturer: Provide one of the following:

   a. Robroy Industries.
   b. Permacote Industries.
   c. OCAL Incorporated.
   d. Or equal.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install at motors, transformers and equipment which are subject to vibration or require movement for maintenance purposes. Provide necessary reducer where equipment furnished cannot accept 3/4-inch size flexible conduit. Limit flexible conduit length to three feet maximum.

END OF SECTION

SECTION 16133

SEALING FITTINGS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Provide labor, materials, equipment and incidentals as shown on the Drawings, specified and required to furnish and install conduit sealing fittings.

1.02 REFERENCED SECTIONS:

A. Section 01330 – Submittals

B. Section 16050 – Electrical Work.

1.03 QUALITY ASSURANCE

A. Reference Standards: Comply with applicable provisions and recommendations of the following, except where otherwise shown or specified.

1. UL Standard 886, Electrical Outlet Boxes and Fittings for Use in Hazardous Locations, Class 1, Groups A, B, C and D and Class II, Groups E, F and G.

1.04 SUBMITTALS

A. Refer to Section 01330 for submittal requirements.

B. Shop Drawings: Submit for approval the following:

1. Manufacturer's catalog cuts and technical information for conduit sealing fittings proposed for use.

2. Listing of locations where fittings are to be used.

1.05 ENVIRONMENTAL REQUIREMENTS

A. Refer to Specification Section 16050 for environmental conditions affecting products on site.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Materials and Construction:

1. Cast gray iron alloy or cast malleable iron or copper free aluminum bodies with zinc electroplate and lacquer or enamel finish.

2. Ample opening with threaded closure for access to conduit hub for making dam.

3. In corrosive locations, fittings shall include a factory applied 40-mil PVC coating.

B. Sealing fiber for forming the dam within the hub and the sealing compound shall be approved for use with the fittings furnished, and shall be products of the fitting manufacturer.

C. Product and Manufacturer: Provide one of the following:

1. Appleton Electric Company.

2. Eaton/Crouse Hinds Company.

3. Or equal.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install for hazardous locations as required by National Electrical Code, and as indicated on the Drawings.

B. Select a fitting for the proper use in respect to the mounting position.

C. Use oversized fittings with reducing bushings when necessary to maintain cable fill requirements of the conduit system.

END OF SECTION

SECTION 16136

OUTLET BOXES

PART 1 - GENERAL

1.01 SUMMARY

A. Provide labor, materials, equipment and incidentals as shown on the Drawings, specified and required to furnish and install outlet boxes for mounting wiring devices (outlets and snap switches) and lighting fixtures.

1.02 REFERENCED SECTIONS:

A. Section 16050 – Electrical Work

B. Section 16122 – 600 Volt Cable

C. Section 16140 – Wiring Devices

1.03 REFERENCES

A. National Fire Protection Association:

1. NFPA 70, National Electrical Code.

B. National Electrical Manufacturers Association:

1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

2. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.

3. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.

4. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers, and Box Supports.

C. Underwriters Laboratories

1. UL Standard No. 50, Electrical Cabinets and Boxes.

2. UL Standard No. 886, Electrical Outlet Boxes and Fittings for Use in Hazardous Locations.

1.04 SYSTEM DESCRIPTION

A. Boxes located as indicated on Drawings, and at other locations required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements. Boxes are shown in approximate locations unless dimensioned.

B. Outdoor Locations, Above Grade: Provide cast FD PVC Coated outlet boxes with cast threaded hubs, NEMA 4X stainless steel pull, and junction boxes, appropriate for the environmental conditions.

C. In Slab Above Grade: Provide cast PVC Coated outlet boxes with threaded hubs, appropriate for the environmental conditions.

D. Wet and Damp Locations: Provide PVC coated rigid steel conduit. Provide cast FD PVC Coated outlet boxes with cast threaded hubs, NEMA 4X stainless steel pull, and junction boxes, appropriate for the environmental conditions.

1.05 SUBMITTALS

A. Shop Drawings: Submit for approval the following:

1. Manufacturers technical information for outlet boxes proposed for use.

B. Closeout submittals

1. Project Record Documents:

a. Record actual locations and mounting heights of outlet boxes.

1.06 QUALITY ASSURANCE

A. Reference Standards: Comply with applicable provisions and recommendations of the following, except where otherwise shown or specified:

1. NEC Article 314, Outlet, Switch and Junction Boxes and Fittings.

2. UL Standard No. 514, Electrical Outlet Boxes and Fittings.

1.07 DELIVERY, STORAGE AND PROTECTION

A. Refer to Specification Section 16050.

B. Protect materials from weather, construction traffic, dirt water, chemical and mechanical damage.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Device Boxes:

1. Material: Cast gray iron alloy, or cast malleable iron, with zinc electroplate finish in wet locations and zinc-coated sheet steel in dusty locations. Cast boxes shall be hub type and include external mounting lugs. In corrosive locations, boxes shall include a factory applied 40-mil PVC coating. In dusty locations, where conduit is installed concealed, boxes shall be steel galvanized and shall include suitable extension rings and covers, as required.

2. Device Cover Plates:

a. Stainless steel Type 302 alloy for indoor finished areas.

b. Gasketed spring door type for wet and corrosive locations. Plates in corrosive locations shall include a factory applied 40-mil PVC coating.

c. Integral with device for hazardous locations.

d. Stainless steel screws and hardware.

3. Manufacturer: Provide device boxes of one of the following:

a. Appleton Electric Company.

b. Crouse-Hinds Company.

c. Substitutions: Approved equal.

2.02 SOURCE QUALITY CONTROL

A. Material and equipment shall be listed or recognized by Underwriters Laboratories Inc. (UL) for the use intended.

B. The Owner and Construction Manager require the specified manufacturer to provide the equipment and/or products to be furnished under this section. The Owner and Construction Manager believe the manufacturer is capable of producing equipment and/or products that will satisfy the requirements of this Section. This statement, however, shall not be construed to mean that the named manufacturer's standard product will comply with the requirements of this Section. Manufacturers shall be as specified for the purpose of compatible and efficient utilization of existing equipment, supplies, and personnel training and experience.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Adjust box location up to 10 feet prior to rough-in to accommodate intended purpose.

B. Carefully select box locations so that the equipment or piping of other trades passing under, over, across or in close proximity to same, will not limit access for use or maintenance. If the Contractor is unsure about the final location of any box, consult with the Engineer for decision.

C. Mounting Heights:

1. The exact mounting height of each switch, receptacle, light fixture outlet, etc., shall be confirmed on the premises in conference with the Engineer.

2. Unless otherwise indicated, receptacles to be mounted at 18-inches and light switches to be mounted at 42-inches above finished floor/grade.

D. Install and orient boxes to accommodate wiring devices as specified in Section 16140.

E. Fasten boxes rigidly and neatly to supporting structures.

F. For units mounted on masonry or concrete walls, provide suitable 1/2-inch spacers to prevent mounting back of box directly against wall.

G. Leave no open conduit holes in boxes. Close unused openings with capped bushings.

H. Do not install flush mounting box back-to-back in walls; install with minimum 6 inches separation. Install with minimum 24 inches separation in acoustic rated walls.

I. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.

J. Install stamped steel bridges to fasten flush mounting outlet box between studs.

K. Install flush mounting box without damaging wall insulation or reducing its effectiveness.

L. Install adjustable steel channel fasteners for hung ceiling outlet box.

M. Do not fasten boxes to ceiling support wires or other piping systems.

N. Install gang box where more than one device is mounted together. Do not use sectional box.

O. Install gang box with plaster ring for single device outlets.

P. Label each circuit in boxes and identify in accordance with Section 16122.

Q. Install in conformance with National Electrical Code.

END OF SECTION

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SECTION 16140

WIRING DEVICES

PART 1 - GENERAL

1.01 SCOPE

A. Provide labor, materials, equipment and incidentals as shown on the Drawings, specified and required to furnish and install receptacles, wall snap switches and device plates.

1.02 REFERENCED SECTIONS:

A. Section 16122 – 600 Volt Cable.

B. Section 16136 – Outlet Boxes.

1.03 QUALITY ASSURANCE

A. Reference Standards: Comply with applicable provisions and recommendations of the following, except where otherwise shown or specified.

B. National Fire Protection Association:

1. NFPA 70, National Electrical Code.

C. Underwriters Laboratory

1. UL Standard No. 1010, Electrical Receptacle - Plug Combinations for Use in Hazardous Locations.

2. UL Standard No. 20, General Use Snap Switches.

3. UL Standard No. 894, Switches for Use in Hazardous Locations.

D. National Electrical Manufacturers Association:

1. NEMA WD 1 - General Requirements for Wiring Devices.

2. NEMA WD 6 - Wiring Devices-Dimensional Requirements.

1.04 SUBMITTALS

A. Shop Drawings: Submit the following for approval:

B. Manufacturer's technical information for receptacles, switches and device plates proposed for use.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Receptacles for Non-Hazardous Locations:

1. Receptacle shall be heavy duty, industrial specification grade.

2. Duplex grounding receptacle, two pole, three wire, 125 volt AC, 20 amperes.

a. Product and Manufacturer: Provide one of the following:

1) Catalog No. HBL5362I, for dry indoor locations and Catalog No. HBL53CM62, for wet and corrosive locations, by Hubbell Inc.

2) Substitutions: Approved equal.

3. Single grounding receptacle, corrosion resistant, two pole, three wire, 125 volt AC, 20 amperes.

a. Product and Manufacturer: Provide one of the following:

1) Catalog No. HBL53CM61, by Hubbell Inc.

2) Substitutions: Approved equal.

B. Receptacles for Hazardous Locations:

1. Material:

a. Factory sealed receptacle suitable for installation in Class I, Group D hazardous locations.

b. Copper-free aluminum receptacle and cover with cast gray iron alloy or cast malleable iron mounting box with zinc electroplate finish.

c. Receptacle rated at 20 amperes, 125 to 250 volt AC, two wire, three pole.

d. Provide matching plug for each receptacle.

2. Product and Manufacturer: Provide one of the following:

a. Series CPS by Crouse-Hinds Company.

b. Type CPS by Appleton Electric Company.

c. Substitutions: Approved equal.

C. Ground Fault Receptacles:

1. Duplex receptacle, two pole, three wire, 125 volt AC, 20 amperes.

2. Product and Manufacturer: Provide one of the following:

a. Catalog No. GFR5362ITR, by Hubbell Inc.

b. Substitutions: Approved equal.

D. Surge Suppression Receptacles: (Not Used)

E. Power Receptacles: (Not Used)

F. Power and Special Receptacles: (Not Used)

G. Switches for Non-Hazardous Locations:

1. Single pole AC toggle switch, quiet type, 120/277 volt AC, 20 amperes, Ivory, specification grade.

a. Product and Manufacturer: Provide one of the following:

1) Catalog No. 1221-I, by Harvey Hubbel Incorporated.

2) Substitutions: Approved equal.

2. Single pole, 3-way AC toggle switch, quiet type, 120/277 volt AC, 20 amperes, Ivory, specification grade.

a. Product and Manufacturer: Provide one of the following:

1) Catalog No. 1223-I, by Harvey Hubbell Incorporated.

2) Substitutions: Approved equal.

3. Two pole AC toggle switch, quiet type, 120/277 volt AC, 20 amperes, Ivory, specification grade.

a. Product and Manufacturer: Provide one of the following:

1) Catalog No. 1222-I, by Harvey Hubbel Incorporated.

2) Substitutions: Approved equal.

H. Switches for Hazardous Locations:

1. Material:

a. Factory sealed tumbler switch suitable for installation in Class I, Group D hazardous locations.

b. Cast gray iron alloy or cast malleable iron body and cover with zinc electroplate finish.

c. Switch rated at 20 amperes, 120/277 volt AC.

2. Product and Manufacturer: Provide one of the following:

a. Series EDS by Crouse-Hinds Company.

b. Type EDS by Appleton Electric Company.

c. Substitutions: Approved equal.

I. Switch Covers:

1. Indoor covers shall be Type 304, stainless steel.

2. Outdoor or wet location covers shall be weatherproof and corrosion resistant.

J. Key Operated On-Off Switches: (Not Used)

K. Wiring Device Coverplates:

1. Indoor Coverplates:

a. Unless otherwise indicated, coverplates installed indoors or in control panels shall be brushed anodized aluminum.

2. Weatherproof locations:

a. Wiring devices installed outdoors or where identified on Drawings with “WP” shall contain a gasketed coverplate UL approved for wet locations.

3. Where weatherproof-while-in-use coverplates are indicated on the Drawings or required by NEC, provide power receptacles with a cover that maintains UL approval for wet locations when a cord is plugged into the receptacle. Weatherproof-while-in-use coverplates shall be TayMac 10130 or equal.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify outlet boxes are installed at proper height.

B. Verify wall openings are neatly cut and completely covered by wall plates.

C. Verify branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

3.02 PREPARATION

A. Clean debris from outlet boxes.

3.03 EXISTING WORK

A. Disconnect and remove abandoned wiring devices.

B. Modify installation to maintain access to existing wiring devices to remain active.

C. Clean and repair existing wiring devices to remain or to be reinstalled.

3.04 FIELD QUALITY CONTROL

A. Contractor shall verify that the openings have been properly patched around devices without damage to devices.

B. Damaged or painted devices shall be replaced or cleaned as directed by the Engineer.

3.05 INSTALLATION

A. Install receptacles and switches at locations as shown on the Drawings in outlet or device boxes in accordance with Section 16136, in non-hazardous locations.

B. Install receptacles and switches in PVC coated galvanized rigid steel conduit systems in hazardous locations.

C. Install receptacles with ground pole in the down position.

D. Connect wiring device grounding terminal to outlet box with bonding jumper and branch circuit equipment grounding conductor.

E. Install plates on all switch, receptacle, and blank outlets.

F. Mount receptacles 18-inches above finished floor in non-hazardous locations and 4 feet-6 inches above finished floor in hazardous locations, unless otherwise noted.

G. Mount wall switches 4 feet-6 inches above finished floor unless otherwise noted.

H. Identify each conductor with the circuit number and the lighting panel number. Identification shall conform to the requirements of Section 16122.

I. Devices and coverplates shall be plumb and parallel to adjacent surfaces or trim. Flush-mounted devices must be flush with finished wall surfaces and the coverplates must be tight to surfaces over which they are installed.

J. Receptacles identified as GFCI or when required by the NEC shall have individual GFCI receptacles installed for each outlet. Installing a single GFCI receptacle and standard receptacles connected to the load side of the single GFCI receptacle is unacceptable.

K. Identify each receptacle with a permanent self-adhesive label. Approximate size 3/8” x 1-1/4”. The label shall include the panel name and circuit number.

1. Product and Manufacturer: Provide one of the following:

a. Catalog No. PTL-45422 by Brady.

b. Substitutions: Approved equal.

L. Install in conformance with National Electrical Code.

END OF SECTION

SECTION 16180

OVERCURRENT PROTECTIVE DEVICES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Overcurrent protective devices for panelboards, lighting control panelboards, switchboards, motor control centers, motor controllers, variable frequency drives, and enclosed overcurrent protective devices. The words “switchboard” and “motor control center” are used interchangeably.

B. Work Includes

1. Circuit breakers.
2. Bolted pressure switches.
3. Fuses.
4. Trip unit retrofits for existing circuit breakers.

1.02 REFERENCED SECTIONS

A. Section 01330 – Submittals

1.03 SUBMITTALS

A. Submit product data in accordance with Section 01330.

B. Make submittal in the section specifying the equipment containing the devices; (i.e. submit molded case panelboard branch circuit breakers, motor control center breaker buckets/doors/breakers).

C. Product Data:

1. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications. Submittal shall have material keyed to device and/or panelboard(s)/switchboard(s) designations on plans.
2. Include device type, frame and trip ratings, voltage and AIC ratings, mounting, and accessories.

1.04 APPLICABLE PUBLICATIONS

A. Publications listed below (including amendments, addenda, revisions, supplements and errata) form a part of this specification to the extent referenced. Publications are referenced in the text by basic designation only.

B. Institute of Engineering and Electronic Engineers (IEEE):

1. C37.13-90, Low Voltage AC Power Circuit Breakers Used in Enclosures
2. C37.51-89, Test Procedures for Low-voltage AC Power Circuit Breakers Used in Enclosures.
3. C57.13-93, Instrument Transformers
4. C62.41-91, Surge Voltage in Low Volume AC Power Circuits
5. C62.45-92, Testing for Equipment connected to Low-Voltage AC Power Circuits

C. National Electrical Manufacturer's Association (NEMA):

1. PB-2-95, Dead-Front Distribution Switchboards.

2. PB-2.1-96, Instructions for Safe Handling, Installation, Operation, and Maintenance of Switchboards

3. AB-1-93, Molded Case Circuit Breakers

D. National Fire Protection Association (NFPA):

1. NFPA 70,National Electrical Code (NEC)

E. Underwriters Laboratories, Inc. (UL):

1. 67-93, Panelboards

2. 489-96, Molded Case Circuit Breakers and Circuit Breakers Enclosures

3. 891-98, Dead-Front Switchboards

4. 1283-98, Electromagnetic Interference Filters

5. 1449-96, Transit Voltage Surge Suppressors

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Circuit Breakers:

1. Square D.

B. Fuses:

1. Buss.

2. Ferraz-Shawmut.

3. Littelfuse.

4. Approved equal.

2.02 MOLDED CASE CIRCUIT BREAKERS FOR BRANCH CIRCUIT PANELBOARDS

A. Breakers shall be UL listed and labeled, in accordance with the NEC, as shown on the drawings, and as herein specified. Breakers shall be products of the panelboard manufacturer.

B. Breakers shall be standard-rated unless otherwise noted.

C. Circuit breakers shall be bolt-on type for 277/480V panelboards and plug-on type for 120/208V panelboards, unless otherwise indicated.

D. Construction:

1. Each breaker shall consist of molded case frame, operating mechanism, arc extinguishers, contacts, trip elements, and terminal connectors.

2. The operating mechanism shall be toggle type, quick-make, quick-break, trip free. The handle shall be clearly marked with the rating, and shall indicate the position (ON, OFF or TRIPPED). Multi-pole breakers shall have common trips. The contacts shall be silver alloy. The breaker shall have a arc quenchers and phase barriers for each pole. An overload on one pole of a multi-pole breaker shall automatically cause all the poles of the breaker to open.

a. The following materials shall not be acceptable: tie handles on circuit breakers; tandem, duplex, wafer breakers, etc.

3. Breakers shall have noninterchangeable trips except where permitted otherwise in the plans.

4. Two visible forms of Tripped indication, by breaker handle residing between the On and Off positions and by trip indicator appearing in the window of the circuit breaker housing.

E. Rating: Molded case circuit breakers shall have minimum interrupting rating as shown on drawings.

F. Solenoid operated circuit breakers in lighting control panelboards shall meet the requirements above, and have the following additional features:

1. Remote-controlled latching type.

2. Shall accept input from a low-voltage signal for Open and Closed contact positioning. Contacts shall remain Open when the breaker handle is in the Off or Tripped position regardless of the low voltage control signal. Remote control shall only be possible with the breaker handle in the On position.

3. Shall have an integral low-voltage control connector.

4. Shall have an electrical life of 200,000 operations at 80% load and 0.8 power factor.

G. Where main breaker frame size shown is insufficient to land conductors shown on plans, provide manufacturer's accessory lug kits or increase breaker frame size to accommodate conductors shown.

2.03 MOTOR CONTROL CENTER MOLDED CASE CIRCUIT BREAKERS UNDER 1,000 AMPERES

A. Circuit breakers may be installed in motor control centers, variable frequency drives, combination motor controllers, and locations as shown on plans.

B. Construction:

1. Each breaker shall consist of bolt-on molded case frame, operating mechanism, arc extinguishers, contacts, trip elements, and terminal connectors.

2. The operating mechanism shall be quick-make, quick-break, over center toggle-type, and the handle mechanism shall be trip free to prevent holding the contacts closed against a short circuit or sustained overload. The handle shall be clearly marked with the rating, and shall indicate the position (ON, OFF or TRIPPED). Multi-pole breakers shall have common trips. An overload on one pole of a multi-pole breaker shall automatically cause all the poles of the breaker to open.

C. Rating:

1. Voltage rating shall not be less than the applicable circuit voltage.

2. The interrupting rating shall be at least equal to the indicated short circuit current rating (SCCR) of the motor control center or variable frequency drive where installed.

3. All breakers shall be U.L. listed for application in their intended enclosure for 80% of their continuous ampere rating unless otherwise noted on the plans.

D. Thermal-magnetic trip elements

1. Automatic operation shall be obtained by means of thermal-magnetic tripping devices located in each pole providing inverse time delay and instantaneous circuit protection. The magnetic trip shall be adjustable and accessible from the front of all circuit breakers on frame sizes above 400 amperes.

E. Solid state trip elements

1. Solid state electronics shall be self-contained and require no external relaying, power supply, or accessories. Sensing shall measure true RMS current and shall be toroidal construction, epoxy-encased, and integral to the circuit breaker. Circuit breakers shall have tripping functions as shown on the drawings and as described below:

   a. Long-time current pickup, adjustable from 50 percent to 100 percent on continuous current rating.

   b. Adjustable long-time delay.

   c. Short-time current pickup, adjustable from 1.5 to 9 times long-time current rating.

   d. Adjustable short-time delay.

   e. Short-time I squared times t switch.

   f. Instantaneous current pickup, adjustable from 1.5 to 9 times long-time current rating.

   g. Ground-fault pickup, adjustable from 20 percent to 60 percent of sensor rating, but not greater than 1200 amperes. Sensing of ground fault current at the main bonding jumper or ground strap is not acceptable. Zone-selective interlocking shall be provided where shown.

   h. Adjustable ground-fault delay.

   i. Ground-fault I squared times t switch.

   j. Overload and ground-fault trip indicators shall be provided.

F. Frame size:

1. Where frame size shown is insufficient to land conductors shown on plans, provide manufacturer's accessory lug kits or increase breaker frame size to accommodate conductors shown.

G. Accessories:

1. Circuit breakers shall have accessories or auxiliary functions as shown on plans.

2.04 MOTOR CONTROL CENTER INSULATED CASE CIRCUIT BREAKERS UNDER 400 AMPERES

A. Circuit breakers may be installed in switchboards, enclosures, motor control centers, and locations as shown on plans.

B. Construction:

1. Each breaker shall consist of bolt-on insulated case frame, operating mechanism, arc extinguishers, contacts, solid state trip unit, and terminal connectors.

2. The operating mechanism shall be quick-make, quick-break, over center toggle-type, and the handle mechanism shall be trip free to prevent holding the contacts closed against a short circuit or sustained overload. The handle shall be clearly marked with the rating, and shall indicate the position (ON, OFF or TRIPPED). Multi-pole breakers shall have common trips. An overload on one pole of a multi-pole breaker shall automatically cause all the poles of the breaker to open.

C. Rating:

1. Voltage rating shall not be less than the applicable circuit voltage.

2. The interrupting rating shall be at least equal to the indicated short circuit current rating (SCCR) of the motor control center or variable frequency drive where installed.

3. All breakers shall be U.L. listed for application in their intended enclosure for 80% of their continuous ampere rating., unless otherwise noted.

D. Solid-state trip unit:

1. Solid state electronics shall be self-contained and require no external relaying, power supply, or accessories. Sensing shall measure true RMS current and shall be toroidal construction, epoxy-encased, and integral to the circuit breaker. Circuit breakers shall have tripping functions as shown on the drawings and as described below:

a. Long-time current pickup, adjustable from 50 percent to 100 percent on continuous current rating.

b. Fixed long-time delay.

c. Short-time current pickup, adjustable from 1.5 to 9 times long-time current rating.

d. Fixed short-time delay.

e. Short-time I squared times t switch]

f. Ground-fault pickup, adjustable from 20 percent to 60 percent of sensor rating, but not greater than 1200 amperes. Sensing of ground fault current at the main bonding jumper or ground strap is not acceptable. Zone-selective interlocking shall be provided where shown.

g. Fixed ground-fault delay.

h. Ground-fault I squared times t switch.

i. Overload and ground-fault trip indicators shall be provided.

E. Frame size:

1. Where frame size shown is insufficient to land conductors shown on plans, provide manufacturer's accessory lug kits or increase breaker frame size to accommodate conductors shown.

F. Accessories:

1. The following accessories shall be available, and provided as shown on plans: shunt trip, spring release, undervoltage release, and auxiliary switch contacts that indicate breaker contact position. Accessories shall be field-installable, plug-in types.

2.05 FUSES

A. Types:

1. Main Service Feeders and Branch Circuits:

a. Switch rating over 600 amperes; Hi-Cap Type KRP-C UL Class L with interrupting rating of 200,000 amperes RMS.

b. Switch rating 600 amperes or less; low-peak current limiting fuses, LP-RK UL Class RK1 with interrupting rating of 200,000 amperes RMS.

2. Motors 3/4 Horsepower or Greater:

a. Fuse rating 600 amperes or less: UL Class K5 dual-element current-limiting with interrupting rating of 200,000 amperes RMS.

b. Fuses shall be sized for motor running current, per applicable NEC Article 430.

c. Equipment With Hermetic Compressors: Fusetron or HACR breaker, sized per manufacturer's nameplate.

d. All fuses shall be of the Class "R" rejection type.

B. Coordination: Fuses for all feeders, branch circuits, motors, and other equipment to be selected in types and ratings in accordance with NEC to provide a coordinated system of overcurrent protection.

PART 3 - EXECUTION

3.01 CIRCUIT BREAKERS

A. Install according to NEC, and manufacturer's recommendations.

B. Where new circuit breakers are installed in existing panelboards, match the existing type, manufacturer, and AIC rating unless otherwise shown.

C. Torque all lugs per manufacturer's specifications.

3.02 FUSES

A. Fuses shall be mounted so that the labels showing their rating can be read without requiring fuse removal.

B. Provide one spare set of (3) of each size and type of fuses rated at 100 amperes and over, and two spare sets of (3) of each size and type of fuse rated below 100 amperes. Provide a typed list of the spare fuses, detailing catalog number and application equipment for each spare fuse provided.

3.03 TRIP UNIT INSTALLATION ON EXISTING CIRCUIT BREAKERS

A. De-energize breaker (if necessary) and remove existing trip unit.

B. Install and test new unit per manufacturer's instructions. Owner will provide settings for new units.

END OF SECTION

SECTION 16195

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Nameplates.

B. Wire markers.

C. Conduit markers.

1.02 REFERENCED SECTIONS

A. Section 01330 – Submittals

B. Section 16050 – Electrical Work

1.03 SUBMITTALS

A. Refer to Section 01330 for submittal requirements.

B. Product Data:

1. Submit manufacturer's catalog literature for each product required.

2. Submit electrical identification schedule including list of wording, symbols, letter size, color coding, tag number, location, and function. Identification for AC powered equipment to include voltage and power source.

C. Manufacturer's Installation Instructions: Indicate installation instructions, special procedures, and installation.

D. Closeout Submittals

1. Project Record Documents: Record actual locations of tagged devices; include tag numbers.

1.04 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years experience.

B. Installer: Company specializing in performing Work of this Section.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Refer to Specification Section 16050, for requirements related to transporting, handling, storing, and protecting products.

B. Accept identification products on site in original containers. Inspect for damage.

C. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.

D. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Refer to Specification Section 16050 for environmental conditions affecting products on site.

PART 2 - PRODUCTS

2.01 NAMEPLATES

A. Manufacturers:

1. Craftmark Pipe Markers.
2. Kolbi Pipe Marker Co.
3. Pipemarker.com; Brimar Industries, Inc.
4. Seton Identification Products; a Brady Corporation company.
5. Substitutions: Or equal.

B. Product Description: Laminated three-layer plastic with engraved black letters on white contrasting background color.

C. Letter Size:

1. 3/16 inch high letters for identifying individual equipment and loads.
2. 1/4 inch high letters for identifying grouped equipment and loads.

D. Minimum nameplate thickness: 1/8 inch.

2.02 WIRE MARKERS

A. Manufacturers:

1. Brady ID.
2. Grafoplast Wire Markers.
3. Ideal Industries, Inc.
4. Substitutions: Or equal.

B. Description: Brady PSPT perma-sleeve heat shrinkable white polyolefin (B-342) labels, for conductor sizes 28 AWG to 500 KCMIL.

C. Legend:

1. Power and Lighting Circuits: Branch circuit or feeder number.
2. Control Circuits: Control wire number as indicated on schematic and interconnection diagrams.

2.03 CONDUIT AND RACEWAY MARKERS

A. Manufacturers:

1. Seton Identification Products; a Brady Corporation company.
2. Substitutions: Or equal.

B. Description: Brass Tags - Raceway Markers

1. Material: 1.5 inch circular brass tags stamped with 3/16 inch high characters.
2. Lettering: Stamped with 3/16 inch high characters.
3. Stainless Steel Tie: Attached with cleanly cut 48 mil stainless steel wire secured and or spliced with an irreversible style crimp.
4. Tie Installation Tool: Proper tool approved for the purpose.

PART 3 - EXECUTION

3.01 PREPARATION

A. Degrease and clean surfaces to receive adhesive for identification materials.

3.02 EXISTING WORK

A. Install identification on existing equipment to remain in accordance with this Section.

B. Install identification on unmarked existing equipment.

C. Replace lost nameplates, labels, and markers.

3.03 INSTALLATION

A. Install identifying devices after completion of painting.

B. Nameplate Installation:

1. Install nameplate parallel to equipment lines.
2. Install nameplate for each electrical distribution and control equipment enclosure with stainless steel screws.
3. Install nameplates for each control panel and major control components located outside panel with stainless steel screws.
4. Install left to right, top to bottom.
5. Secure nameplate to equipment front using stainless steel screws.
6. Secure nameplate to inside surface of door on recessed panelboard in finished locations.
7. Install nameplates for the following:
    a. Control panels.
    b. Instruments and controls.
    c. Junction boxes.
    d. Other electrical equipment where shown on the drawings or specified.

C. Wire Marker Installation:

1. Install wire marker for each conductor at each connection.
2. Installation of wire markers shall be consistent in installation and installed so they read top to bottom for vertically terminated wires and read left to right for horizontally terminated wires.
3. Mark data cabling at each end. Install additional marking at accessible locations along the cable run.
4. Install labels at data outlets identifying patch panel and port designation as indicated on Drawings.

D. Conduit or Raceway Marker Installation:

1. Install marker for each conduit or raceway longer than 6 feet.
2. Conduit or Raceway Marker Spacing: Locations: All terminations.
3. All tags shall be clearly legible or will otherwise be rejected.

4. All shall be identified on both ends using a to/from system that identifies the origination or destination of the conduit and will stay consistent throughout the project. The identification tag will contain the job specific tag and or identifier for the equipment at which that conduit ends. If in question, the owner will determine the information to be provided on the tag.

5. Tagging will be accomplished by use of the following methods, 1.5 inch circular brass tags stamped with 3/16 inch high characters and attached with cleanly cut 48 mil stainless steel wire secured and or spliced with an irreversible style crimp using the proper tools approved for the purpose.

END OF SECTION

SECTION 16215

POWER SYSTEM STUDY

PART 1 - GENERAL

1.01 DESCRIPTION

A. General:

1. Prepare a short circuit and coordination study for the electrical power system. The short circuit and coordination study reports shall provide an evaluation of the electrical power systems and the model numbers and settings of the protective devices.

B. Scope:

1. Provide a complete short circuit study, equipment interrupting or withstand evaluation, and a protective device coordination study for the indicated new components of the existing Plant power distribution system. The study shall include all portions of the electrical power distribution system. Normal system operating method, alternate operation, and operations which could result in maximum fault conditions shall be thoroughly addressed in the study. The study shall assume all motors operating at rated voltage with the exception that motors identified as "standby" shall not be included. Electrical equipment bus impedance shall be assumed zero. Short circuit momentary duties and interrupting duties shall be calculated on the basis of maximum available fault current at the switchgear busses and motor control centers. The phase over-current and ground-fault protection shall be included as well as settings for all other adjustable protective devices.

2. An equipment evaluation study shall be performed to determine the adequacy of circuit breakers, controllers, surge arresters, busways, switches, and fuses by tabulating and comparing the short circuit ratings of these devices with the available fault currents.

3. Any problem areas or inadequacies in the equipment shall be promptly brought to the ENGINEER'S attention.

1.02 REFERENCES

A. This Section contains references to the following documents. They are a part of this Section as specified and modified. In case of conflict between the requirements of this Section and those of the listed documents, the requirements of this Section shall prevail.

1. IEEE 141-86, Recommended Practice for Electric Power Distribution for Industrial Plants

2. IEEE 242-86, Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems

PART 2 - PRODUCTS

2.01 REPORTS

A. The product shall be a certified report summarizing the short circuit and coordination study and conclusions or recommendations which may affect the integrity of the electric power distribution system. As a minimum, the report shall include the following:

1. The equipment manufacturer's information used to prepare the study.

2. Assumptions made during the study.

3. Short circuit calculations listing short circuit levels at each bus.

4. Coordination study time-current curves including the instrument transformer ratios, model numbers of the protective relays, and the relay settings associated with each breaker.

5. Comparison of short circuit duties of each bus to the interrupting capacity of the equipment protecting that bus.

6. All data which was used as input to the report. This data shall include cable impedances, source impedances, equipment ratings, etc.

PART 3 - EXECUTION

3.01 GENERAL

A. Provide a short circuit and coordination study on the electrical power distribution system, as specified. The study shall be performed in accordance with IEEE Standards 141 and 242 and shall utilize the ANSI method of short circuit analysis in accordance with ANSI C37.010. The study shall be performed using actual equipment data for all equipment. The coordination study shall use the data from the manufacturer of protective devices.

3.02 QUALIFICATIONS

A. The short circuit and coordination report shall be performed by an electrical testing service who is regularly engaged in power system studies. The studies shall be signed and sealed by a Registered Professional Electrical Engineer. The Registered Professional Electrical Engineer shall be licensed in the State of Arizona.

3.03 SHORT CIRCUIT STUDIES

A. Responsibility to obtain and verify all data needed to perform the studies belongs to CONTRACTOR.

B. As a minimum, each short circuit study shall include the following:

1. One-Line Diagram:

a. Location and function of each protective device in the system, such as relays, direct-acting trips, fuses, etc.

b. Type designation, current rating, range or adjustment, manufacturer's style and catalog number for all protective devices.

c. Power, voltage ratings, impedance, primary and secondary connections of all transformers.

d. Type, manufacturer, and ratio of all instrument transformers energizing each relay.

e. Nameplate ratings of all motors and generators with their subtransient reactances. Transient reactances of synchronous motors and generators and synchronous reactances of all generators.

f. Sources of short circuit currents such as utility ties, generators, synchronous motors, and induction motors.

g. All significant circuit elements such as transformers, cables, breakers, fuses, reactors, etc.

h. Emergency as well as normal switching conditions.

i. The time-current setting of existing adjustable relays and direct-acting trips, if applicable.

2. Impedance Diagram:

a. Available MVA or impedance from the utility company.

b. Local generated capacity impedance.

c. Bus impedance.

d. Transformer and/or reactor impedances.

e. Cable impedances.

f. Equipment impedances.

g. System voltages.

h. Grounding scheme (resistance grounding, solid grounding, or no grounding).

3. Calculations:

a. Determine the paths and situations where short circuit currents are the greatest. Assume bolted faults and calculate the 3-phase and line-to-ground short circuits of each case.

b. Calculate the maximum and minimum fault currents.

3.04 COORDINATION STUDY

A. As a minimum, the coordination study for the power distribution system shall include the following on 5-cycle, log-log graph paper:

1. Time-current curves for each protective relay or fuse showing graphically that the settings will provide protection and selectivity within industry standards. Each curve shall be identified, and the tap and time dial settings shall be specified.

2. Time-current curves for each device shall be positioned to provide for maximum selectivity to minimize system disturbances during fault clearing. Where selectivity cannot be achieved, the ENGINEER shall be notified as to the cause.

3. Time-current curves and points for cable and equipment damage.

4. Circuit interrupting device operating and interrupting times.

5. Indicate maximum fault values on the graph.

6. Sketch of bus and breaker arrangement.

END OF SECTION

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SECTION 16411

DISCONNECT SWITCHES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Provide labor, materials, equipment and incidentals as shown on the Drawings, specified and required to furnish and install disconnect switches.

1.02 REFERENCED SECTIONS

A. Section 16070 – Hangers and Supports for Electrical Systems

B. Section 16140 – Wiring Devices

C. Section 16180 – Overcurrent Protective Devices

D. Section 16195 – Identification for Electrical Systems

1.03 QUALITY ASSURANCE

A. Reference Standards: Comply with applicable provisions and recommendations of the following, except where otherwise shown or specified:

B. International Electrical Testing Association:

1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

C. National Electrical Manufacturers Association:

1. NEMA KS-1, Enclosed Switches.

2. NEMA 250, Enclosures for Electrical Equipment (1,000 Volts Maximum).

D. National Fire Protection Association:

1. NFPA 70, National Electrical Code.

E. Underwriters Laboratory

1. UL Standard No. 98, Enclosed Switches.

1.04 SUBMITTALS

A. Shop Drawings: Submit for approval the following:

1. Manufacturer's technical information for disconnect switches proposed for use.

2. Snap Switches (for disconnect switches on 120 volt, single phase circuits) coordinate with Section 16140.

3. Listing of the switches to be furnished with an identification of their location, intended load(s) being served, horsepower and current rating, voltage rating, number of poles and wires, NEMA enclosure type and enclosure dimensions.

4. Closeout Submittals

5. Project Record Documents: Record actual locations of enclosed switches and ratings of installed fuses.

1.05 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

1.06 EXTRA MATERIALS

A. Furnish three spare fuses of each Class, size, and rating installed.

PART 2 - PRODUCTS

2.01 FUSIBLE SWITCH ASSEMBLIES

A. Manufacturer:

1. Cutler-Hammer / Eaton
2. Square D Company / Schneider Electric.
3. Siemens
4. Substitutions: Approved equal.

B. Product Description:

1. NEMA KS 1, Type Heavy Duty (HD) with externally operable handle interlocked to prevent opening front cover with switch in ON position, enclosed load interrupter knife switch[and neutral kit].
2. Handle lockable in OFF position.

C. Fuse clips: Designed to accommodate NEMA FU 1, Class R fuses.

D. Switch Ratings

1. Rating: Voltage and current ratings and number of poles as required for motor or equipment circuits being disconnected. Switches shall bear a UL label.
2. Switch Rating: Horsepower rated for AC or DC as indicated on Drawings.
3. Short Circuit Current Rating: UL listed for 65,000 rms symmetrical amperes when used with or protected by Class R or Class J fuses.

E. Provide auxiliary dry contacts to indicate switch position.

F. Enclosure: NEMA 250, to meet conditions:

1. Exterior Locations: Type 4X, 316 stainless steel.
2. Wet, Damp, Process, Washdown, or Corrosive Locations: Type 4X, 316 stainless steel.
3. Hazardous Areas: Type 7.

G. Service Disconnect Switches: (Not Applicable)

H. Furnish switches with entirely copper current carrying parts.

2.02 NON-FUSIBLE SWITCH ASSEMBLIES

A. Product Description:

1. NEMA KS 1, Type Heavy Duty (HD) with externally operable handle interlocked to prevent opening front cover with switch in ON position, enclosed load interrupter knife switch.
2. Handle lockable in OFF position.

B. Furnish switches with entirely copper current carrying parts.

C. Enclosure: NEMA 250, to meet conditions:

1. Interior Dry Locations: Type 12.

2. Exterior Locations: Type 4X, 316 stainless steel.

3. Wet, Damp, Process, Washdown, or Corrosive Locations: Type 4X, 316 stainless steel.

4. Hazardous Areas: Type 7.

D. Switch Ratings

1. Rating: Voltage and current ratings and number of poles as required for motor or equipment circuits being disconnected. Switches shall bear a UL label.

2. Switch Rating: Horsepower rated for AC or DC as indicated on Drawings.

3. Short Circuit Current Rating: UL listed for 65,000 rms symmetrical amperes when used with or protected by Class R or Class J fuses.

E. Provide auxiliary dry contacts to indicate switch position.

F. Disconnect switches installed for motors being served by variable frequency drives or where indicated shall include a dry contact that opens before the switch blades open. When the disconnect switch is switched to the OFF position, this contact can be used to de-energize serving equipment before the phase conductors are opened.

2.03 MATERIALS

A. Double Throw Safety Switches: (Not Applicable)

B. Identification:

1. Identify all enclosures in accordance with Section 16195.

2. Nameplate identifying equipment, include identification of the equipment served and source of power, for which switches serve as the disconnecting means. Nameplates shall be permanently fastened to enclosures.

PART 3 - EXECUTION

3.01 EXISTING WORK

A. Disconnect and remove abandoned enclosed switches.

B. Maintain access to existing enclosed switches and other installations remaining active and requiring access. Modify installation or provide access panel.

C. Clean and repair existing enclosed switches to remain or to be reinstalled.

3.02 INSTALLATION

A. Install enclosed switches plumb and level. Provide supports in accordance with Section 16070.

B. Height: 5 feet to operating handle or as indicated on the Drawings.

C. Install fuses for fusible disconnect switches. Refer to Section 16180 for product requirements.

D. Install engraved plastic nameplates in accordance with Section 16195.

E. Apply adhesive tag on inside door of each fused switch indicating NEMA fuse class and size installed.

3.03 FIELD QUALITY CONTROL

A. Inspect and test in accordance with NETA ATS, except Section 4.

B. Perform inspections and tests listed in NETA ATS, Section 7.5.

3.04 INSTALLATION

A. Prior to installing disconnect switches, coordinate with other trades to verify conduits have adequate space to leave and enter the switch enclosure and for required code clearance. A minimum working clearance as defined by the NEC 110-26 shall be provided.

B. Mount equipment so that sufficient access and working space is provided for ready and safe operation and maintenance.

C. Securely fasten equipment to walls or other structural supports on which they are mounted. Provide independent stainless steel supports where no wall or other structural surface exists.

D. Furnish one set of spare fuses for each fused disconnect switch to be installed.

E. Install in conformance with National Electrical Code.

END OF SECTION

SECTION 16450

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. System Grounding:

1. Secondary service neutrals shall be grounded at the supply side of the secondary disconnecting means and at the related transformers.

2. Separately derived systems (transformers downstream from the service entrance) shall have the secondary neutral grounded to building steel with an exothermic weld [at the first overcurrent protective disconnecting means on the secondary feeder, before any utilization].

B. Equipment Grounding:

1. Metallic structures, enclosures, raceways, junction boxes, outlet boxes, cabinets, machine frames, and other conductive items in close proximity with electrical circuits shall be grounded for personnel safety and to provide a low impedance path for possible ground fault currents.

1.02 REFERENCED SECTIONS

A. Section 01330 – Submittals

1.03 SUBMITTALS

A. Provide submittals for grounding, components, and accessories per Section 01330.

B. Product Data:

1. Submit catalog cuts and descriptive literature for approval as specified herein.

2. Sufficient information, clearly presented, shall be included to determine compliance with drawings and specifications.

3. The specific item(s) proposed shall be marked on the catalog cuts.

C. Test Reports: Submit certified test reports of ground resistance to the Architect/Engineer for approval.

1.04 REFERENCES

A. National Fire Protection Association (NFPA) Publications:

1. No. 70, National Electrical Code (NEC)

B. Underwriters Laboratories, Inc. (UL) Publications:

1. No. 83, Thermoplastic-Insulated Wires

2. No. 44, Rubber-Insulated Wires and Cables

3. No. 46, Electrical Grounding and Bonding Equipment

PART 2 - PRODUCTS

2.01 GROUNDING WIRES

A. Bare stranded copper. Equipment grounding conductors shall be insulated.

B. Wire size shall not be less than shown on the drawings and not less than required by the NEC.

2.02 GROUND RODS

A. Copper-clad steel, not less than 5/8” diameter by 10 feet long.

2.03 PLATE ELECTRODES

A. Copper-clad steel, minimum 1/4” thick, 2 sq. ft. one-side surface area.

PART 3 - EXECUTION

3.01 INSTALLATION, GENERALLY

A. Grounding shall be in accordance with the NEC, as shown on the drawings, and as hereinafter specified.

B. Underground or inaccessible bonding connections, as well as all connections with or interconnections between grounding electrode conductors, including rebar used as a grounding electrode, shall be made by an approved exothermic welding process. All materials used in an exothermic process shall be by the same manufacturer, and the manufacturer’s requirements for preparations of conductors and materials shall be strictly followed.

3.02 EQUIPMENT AND CIRCUITS

A. Conduit Systems:

1. Line voltage conduit systems, metallic and non-metallic, shall contain a grounding conductor.

2. Conduit provided for mechanical protection and containing only a grounding conductor shall be bonded to that conductor at the entrance and exit from the conduit.

3. Conduit that runs to or from boxes, cabinets or enclosures having concentric knockouts which have not been removed at the conduit connection, shall be provided with bonding jumpers sized in accordance with NEC Table 250.122, and connected with a grounding type bushing / locknut on the conduit and a ground bus or stud inside the box.

B. Cable Tray: (not Used)

C. Feeders and Branch Circuits: Install insulated green grounding conductors with all feeders and branch circuits as follows:

1. Feeders serving equipment.

2. Receptacles and lighting fixtures.

3. All items of equipment where the final connection is made with flexible metal conduit shall have a grounding wire.

4. All additional locations and systems as shown on the drawings and as required by the code.

D. Boxes, Cabinets, Enclosures and Panelboards:

1. Bond the grounding wires to each pull box, junction box, outlet box, cabinets, and other enclosures through which the ground wires pass.

2. Provide lugs in each box and enclosure for ground wire termination.

3. Provide ground bars in panelboards, bolted or welded to the housing (no self tapping or self drilling sheet metal type screws allowed), with sufficient lugs for terminating the ground wires. Bond to neutral where panelboard main serves as building disconnect.

E. Motors and Starters: Provide lugs in motor terminal box and starter housing for ground wire termination.

F. Lighting Fixtures: Shall not be grounded through the conduit systems. Fixtures connected with flexible conduit shall have a ground wire included with the power wires from the fixture through the flexible conduit to the first outlet box. The grounding conductor shall be attached to the fixture housing, not the wiring access cover.

G. Electrical Appliances and Equipment: Fixed electrical appliances and equipment shall have a ground lug installed for termination of the ground conductor.

3.03 CONDUCTIVE PIPING

A. Bond conductive piping systems in the building to the grounding electrode conductor. Bonding connections shall be made as close as practical to the water pipe ground or service equipment ground bus.

3.04 UFER GROUND

A. The grounding electrode conductor shall be bonded to a UFER ground, consisting of minimum 20’ of #4 bare copper encased in minimum 2” of concrete on all sides.

3.05 BUILDING STEEL

A. The grounding electrode conductor shall be bonded to building steel.

3.06 LIGHTNING PROTECTION SYSTEM

A. The lightning protection system shall be bonded to the building ground system.

3.07 GROUND ROD AND PLATE INSTALLATION

A. Where rock refusal occurs, and rod installation per NEC Article 250 is not possible, plate electrodes shall be used.

3.08 GROUND RESISTANCE

A. Maximum ground resistance shall be 5 ohms.

B. Necessary modifications to the ground electrodes for compliance with minimum requirements shall be without additional cost to the Owner.

C. The grounding system shall be tested to ensure that the ground resistance does not exceed that specified. A clamp-on ground resistance test instrument shall be used to test for ground resistance and soil resistivity. Provide a report to the Engineer of the measured ground resistance, including ground resistance after any modifications to the grounding electrodes required to bring the system into compliance with the maximum allowed ground resistance.

END OF SECTION

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SECTION 16481

VARIABLE FREQUENCY DRIVES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:

1. Provide all labor, materials, equipment, and incidentals required to furnish and install variable frequency drives (VFD), complete and operational with controls and accessories as shown on the Drawings and as specified.

B. Coordination:

1. Coordinate speed control, starting and acceleration torque requirements with the driven equipment.

2. Responsibility belongs to CONTRACTOR for coordinating all VFD units with the driven equipment to obtain successful operation throughout the driven equipment speed range.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 01782 – Operations and Maintenance Information

2. Section 09960 – High Performance Coatings

1.03 QUALITY ASSURANCE

A. Manufacturer's Qualifications:

1. Manufacturer shall have a minimum of five years experience of producing substantially similar equipment and shall be able to show evidence of at least five installations in satisfactory operation for at least five years. Prototypes or newly introduced drive unit models will not be acceptable.

B. The manufacturer shall demonstrate, in writing, the Quality Assurance Program in use to certify key components. In-house manufacture of key components is desirable and will be considered in evaluating acceptance.

C. Reference Standards: Comply with applicable provisions and recommendations of the following, except as otherwise shown or specified.

1. National Electrical Code.

2. Standards of National Electrical Manufacturers Association.

3. Institute of Electrical and Electronic Engineers.

4. American Gear Manufacturers Association.

5. National Fire Protection Association 79, Electrical Standard for Industrial Machinery.

D. For the equipment specified herein, the manufacturer shall be ISO 9000, 9001 or 9002 certified.

1.04 SUBMITTALS

A. Shop Drawings: Submit for approval the following:

1. Manufacturer's literature, illustrations, specifications and engineering data which indicate performance, dimensions, materials, size and weight.

B. Fabrication, assembly and installation drawings, and wiring diagrams. Wiring diagrams shall comply with Division 16.

1. Complete list of components and catalogue identification.

2. List of in-house manufactured key components.

3. Quality Assurance Program description.

4. Complete description of schematic and wiring diagrams and functional operation.

5. Recommended spare parts list.

C. Operation and Maintenance Manuals:

1. Submit complete installation, operation and maintenance manuals including test reports, maintenance data and schedules, description of operation and spare parts information.

2. Furnish Operation and Maintenance Manuals in conformance with requirements of Section 01782.

3. Furnish list of final parameters and function selections programmed into each drive control module.

1.05 SHOP TESTS

A. Each variable frequency drive (VFD) shall be tested at the manufacturer's facility.

B. If the test results indicate that any VFD unit does not conform to specified and/or guaranteed performance, the unit shall be modified and retested, at no additional cost to OWNER, until full compliance with specified and guaranteed performance can be demonstrated. OWNER and/or ENGINEER shall be permitted to witness the retest.

C. No equipment shall be shipped until the ENGINEER has approved all test reports.

PART 2 - PRODUCTS

2.01 GENERAL

A. Furnish and install variable frequency drive units, AC PWM inverter type, 460 volts, sine coded with carrier frequency adjustment, 3 phase, 60 hertz input with output suitable for and coordinated with the driven equipment.

B. The drives shall have the following characteristics:

1. Output voltage (Maximum): 460 volts.

2. Frequency accuracy: ±0.5 percent (at 25°C ±10°C).

3. Frequency range: 3 to 67 hertz, selectable by switch to 120 hertz (Except where otherwise indicated).

4. Volts per hertz ratio (V/HZ) adjustable for 3 to 60 hertz.

5. Overload capacity shall be one minute at 125 percent of continuous constant torque rated nameplate current. The inverter shall be designed to not be internally shutdown within the 125 percent overload operating range.

6. Constant torque rated for motor nameplate horsepower without revision of inverter unit manufacturer's nameplate published constant torque rating.

C. VFD's shall meet all requirements as outlined in the latest edition of IEEE 519 for total harmonic voltage and current distortion and as indicated in this Section. Individual or simultaneous operation of the VFDs shall not add more than three percent total harmonic voltage distortion while operating. Maximum allowable total harmonic current distortion limits for each VFD shall not exceed five percent as calculated and measured at the point of common coupling. The point of common coupling for all harmonic calculations and field measurements for both voltage and current distortion shall be defined as the nearest upstream MCC. A preliminary harmonic analysis must be submitted by the VFD manufacturer with Shop Drawings which includes all voltage and current harmonics up to the 99th harmonic; for this purpose, cable lengths can be estimated on a conservative basis by CONTRACTOR. Compliance shall be verified with onsite field measurements of both the voltage and current harmonic distortion at the defined point of common coupling with and without the VFD's operating.

D. Product and Manufacturer:

1. Allen-Bradley Power Flex
2. Schneider Electric
3. Substitutions: Approved equal.

2.02 DETAILS OF CONSTRUCTION

A. All VFD's shall be housed within motor control centers (VFD's in motor control centers shall be built by the same manufacturer as the motor control centers) and configured as shown on the Drawings. VFD units shall be individually fed from circuit breakers located in the motor control centers as shown on the Drawings. VFD's shall be located as shown on the Drawings.

2.03 OPERATIONAL DESCRIPTION

A. Operational sequences shall be as shown on the Drawings and described in the applicable Sections of Division 11 and Division 16 of these Specifications.

2.04 OPTIONAL VFD COMPONENTS

A. All VFD units shall be furnished with no less than the following:

1. Input circuit breaker (with current limiting fuses) interlocked with the unit door. Circuit breaker shall be padlock able in the "OPEN" position.
2. Fused control power transformer.
3. Input line reactor (inductor), three percent.
4. Output load reactor (inductor), three percent.
5. Speed control to be integral on the programmable control module.
6. Process follower to accept 4 to 20 mADC signal input.
7. Output signal of 4 to 20 mADC proportional to speed.
8. All additional devices as shown on the Drawings and specified herein.

2.05 MANUFACTURER

A. The VFD's listed in this Division and in other Divisions shall be the product of one manufacturer. The VFD assembler shall be the manufacturer of the power inverter.

2.06 TRANSIENT CONDITIONS

A. The drives shall be capable of accepting a supply variation of 460 volts plus five percent or minus ten percent at 60 hertz plus or minus two hertz as a standard design feature.

B. The drives shall be of the diode bridge rectifier front-end type to minimize electrical noise generation and to operate at not less then 95 percent power factor over the full operating range.

C. For sustained or momentary power outages the drives shall have a safe shutdown design with automatic ramp-up return to normal operation, upon restoration of power.

D. For momentary voltage dips which shut down the drive, means shall be provided for automatic ramp-up return to full, controlled operation upon restoration of full line voltage.

2.07 ENVIRONMENT

A. The drive shall be capable of operating under any combination of the following conditions without mechanical or electrical damage:

1. Ambient temperature: 0 to 50°C.
2. Relative humidity: 0 to 95 percent non-condensing.
3. Vibration: 0 to 0.5G.

2.08 CONTROL REQUIREMENTS

A. Current limit circuitry shall automatically phase back voltage and frequency to decrease current to 125 percent of the drive rated capacity.

B. The drive and inverter shall be UL listed and labeled by a nationally recognized testing laboratory.

C. The variable speed drive system shall include a diode bridge converter, filter network and a transistorized inverter section. Base driver signals used to control firing of the power transistors shall be designed with optically coupled isolators.

2.09 PROTECTIVE AND OPERATIONAL CHARACTERISTICS

A. The drives shall have the following protective and operational characteristics in addition to those previously described:

1. Adjustable current limit.
2. Overcurrent trip (125 percent).
3. Short circuit trip (hall-effect current transformer).
4. DC bus overvoltage trip.
5. DC bus fuses.
6. Line undervoltage trip (-30 percent) with automatic restart on voltage recovery.
7. Momentary power failure trip (greater than ten milliseconds) with automatic restart.
8. Line input 3-pole circuit breaker with current limiting fuses or current limiting circuit breaker and door interlock.
9. 4 to 20 mADC output signal proportional to speed.
10. LED display of the following:
    a. Overcurrent trip at 125 percent.
    b. Internal component short circuit.

c. Output short circuit.

d. Overload (when soft stall not selected).

e. Overvoltage on DC bus.

f. Overvoltage on input.

g. Undervoltage.

h. Overheat.

i. Ground Fault.

j. Initial parameter mismatch.

11. Electronic motor overload relay.

12. An internal microprocessor shall monitor the load on the drive and in the event of an overload it shall, based on the microprocessor's calculation of the true inverse time overload characteristic, either trip out or phase back the voltage and speed as selected by an internal jumper.

13. Acceleration time: 1 to 20 seconds adjustable.

14. Dynamic braking: 12 percent standard.

15. Ramp to stop: 1 to 20 seconds adjustable.

16. Speed control integral to the programmable control module.

17. Frequency meter integral to the programmable control module.

18. Local/Computer operation solid-state selector switch to be integral to the programmable control module.

19. General fault, run, and stop indication pilot lights mounted on door or integral to the programmable control module. The display must indicate the type of alarm, not part of a general alarm. If programmable control module is not capable of providing indication, provide fault indication pilot lights mounted on the door for each alarm/shutdown condition.

20. Motor and bypass contactors and power unit isolation circuit breaker or contactor as shown on the Drawings or described in the Specifications. Contactors shall be NEMA integral size. Half sizes and IEC rated contactors shall not be acceptable. NEMA dual rated contactors shall not be acceptable.

21. Wetted contacts for remote indication of "RUNNING", “In Remote Mode”, VFD Fault and all other alarm conditions, as required by the Drawings.

22. Fault reset button on door if fault reset feature is not available from the programmable control module.

B. The drive units shall be able to withstand phase-to-phase and phase-to-ground shorts without damage to the drive unit.

C. The drive shall include the solid-state features described above on plug-in circuit boards with microprocessor and on-board diagnostic circuitry with LED readouts as listed above.

D. The drive shall have integral transformers to supply all required control voltages including space heaters, where required. The control transformer and entire drive unit shall be de-energized when the line disconnect switch or circuit breaker is opened.

E. Fault trip conditions, except short time or momentary line voltage loss or line voltage momentary dip, shall lock out the control. Resetting of control after fault trip shall be manual by a door-mounted pushbutton.

F. Auto restart shall be a standard feature of the drive as follows:

1. Auto restart shall be enabled or disabled by programming or jumper selection.

2. On auto restart selection, the microprocessor shall determine, in the event of a fault, if a restart should be attempted. A restart shall be attempted under the following conditions:

   a. Undervoltage (UP): Every time as soon as voltage returns to a safe level. Fault relay shall not be activated.

   b. Input Overvoltage (OPS): Every time as soon as voltage returns to a safe level. Fault relay shall be activated for the duration of the high voltage condition.

   c. Overcurrent (OC): Five attempts in 30 seconds. After the fifth OC, the drive shall trip out and latch the fault relay.

G. A restart shall not be attempted for any other type of fault and the drive shall trip out immediately, activate the fault relay, and make the information available on the programmable control module display until the drive is manually reset.

H. An undervoltage condition of less than 30 ms duration shall not affect drive operation. If main power falls below 85 percent of rated voltage for longer than 30 ms while control power is retained, the drive shall forcibly decelerate the load in an attempt to force a higher bus voltage through regeneration to allow the drive to "ride through" the undervoltage condition for up to 70 additional milliseconds for a total "ride through" of up to 100 ms for very high inertia loads. The manufacturer shall provide an option that allows control power to be maintained for 100 ms in the event of a power failure. If the drive drops out, it shall automatically restart upon restoration of full rated voltage, as previously described.

2.10 FACTORY TESTS

A. The testing procedure shall be the manufacturer's standard procedure to assure maintenance free service. The OWNER shall be given 14 days notice prior to start of factory testing so that the OWNER, at his option, may witness the testing.

   1. All final assemblies shall be tested at full load with application of line-to-line and line-to-ground bolted faults. The VFD shall trip electronically without device failure.

   2. After all tests have been performed; each VFD shall undergo a 40-hour burn-in test. The VFD's shall be burned in at 100 percent inductive or motor load for 40 hours without an unscheduled shutdown.

   3. After the burn-in cycle is complete, each VFD shall be put through a 30-minute cycling motor load test before inspection and shipping.

   4. Certification that all of the testing above has been performed shall be provided by the VFD manufacture, upon request.

B. All equipment, devices, instrumentation, and personnel required to perform the tests shall be supplied by the manufacturer. Upon satisfactory completion of the test, the manufacturer shall submit two certified copies of the test report to the ENGINEER. Component failure during testing will require repeating any test associated with the failure or modified components to demonstrate proper operation.

2.11 PAINTING

A. Units shall receive manufacturer's standard finish paint system prior to shipment.

B. Machined, polished, and non-ferrous surfaces shall be coated with corrosion prevention compound.

C. Painting shall conform to the requirements of Section 09960.

D. All internally electronic components, devices terminations and other items shall be coated with an epoxy based conformal coating system.

PART 3 - EXECUTION

3.01 START-UP AND TEST

A. Make adjustments required to place system in proper operating condition.

B. A manufacturer's representative shall check and approve the installation before operation. He shall test operate the system in the presence of the ENGINEER and verify that the units conform to requirements. He shall revisit the jobsite as often as necessary until all trouble is corrected and the installation is entirely satisfactory.

3.02 MANUFACTURER'S SERVICES

A. A factory trained representative shall be provided for installation supervision, start-up and test services and operation and maintenance personnel training services. The representative shall make a minimum of two (2) visits, minimum four (4) hours on-site for each visit, to the site. The first visit shall be for assistance in the installation of equipment. The second visit shall be for checking the completed installation and start-up of the system. Manufacturer's representative shall test operate the system in the presence of the ENGINEER and verify that the variable frequency drives conform to requirements. Representative shall revisit the job site as often as necessary until all trouble is corrected and the installation is entirely satisfactory.

B. All costs, including travel, lodging, meals and incidentals, shall be considered as included in CONTRACTOR'S bid price.

END OF SECTION

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SECTION 16940

INSTRUMENTATION

PART 1 - GENERAL

1.01 SCOPE OF WORK

A. The major components in the instrumentation scope of work are:

1. Furnish, configure, test, commission, and warrant instrumentation as shown in the P&IDs, and/or plans.

2. Include necessary piping, valves, pressure reducers, mounting brackets or flanges, supports, and anchors to complete installation.

3. Provide sunshades for instrumentation for all instruments that are exposed to direct sunlight.

B. System Integrator selection of instrumentation shall be per manufacturer's recommendation for the application and per specifications.

1. If a manufacturer's recommendation or installation instructions are inconsistent with the Contract installation details or specifications, then the Contractor shall submit an RFI describing the inconsistency.

2. If the inconsistency is due to substitution from the first named equipment, then the responsibility of coordination and any additional cost shall be borne by the Contractor.

C. Provide all devices, valves, tubing, fittings, wiring, terminal blocks, calibration consumables, initial calibration equipment, accessories, sunshades and enclosures as specified herein and as shown on Contract Drawings.

D. Furnish all tools, calibration equipment, calibration materials, specialized parts and incidentals necessary to integrate the instrument to the application.

E. Furnish labor for installation, verification, start-up, calibration, testing and commissioning. Contractor shall prove proper function of instrument prior project completion.

1.02 SUBMITTALS AND DRAWINGS

A. Submit shop documents and drawings for approval in accordance with this subsection and as specified.

B. Submit Operating Instructions (O&M Manuals) for each instrumentation device prior to equipment installation.

1.03 OPERATING AND MAINTENANCE INFORMATION

A. Provide operating instructions as specified.

PART 2 - PRODUCTS

2.01 QUALITY

A. All equipment shall be designed and constructed so that in the event of a power interruption, the equipment specified hereunder shall resume normal operation without requiring a manual reset.

B. Signal transmission from remote or field electric and electronic devices shall be 4-20 mA, sourced by a 24 VDC supply internal to the instrument or from a 24 VDC power supply located within the panel that is to receive the signal. Nonstandard transmission methods such as impulse duration, pulse rate, and voltage regulated will not be permitted except where specifically noted.

C. Transmitters or devices located in Class 1, Division 1 or 2 hazardous areas shall be rated for hazardous location installations per NEC and UL. Explosion proof enclosures and raceways or current/spark limiting devices located inside or outside of the classified area shall be furnished to comply with code requirements.

D. Outputs of equipment that are not of the standard signals as outlined, shall have the output immediately converted to 4-20 mA signals for remote transmission.

2.02 INSTRUMENT IDENTIFICATION

A. All major instrumentation and equipment items or systems specified in this Division and/or on the P&IDs are identified by tag numbers. Tag field equipment with assigned instrumentation tag number and functional description.

1. Tags shall be 1/2" stainless steel DYMO impressed tape with 3/16"(minimum) height characters.

2. Metal tape embosser shall feature a built in hole punching device and scissor cutoff tool.

B. Attach tags to equipment with a 4" long, 20-gage stainless steel wire leash for small devices, or two stainless steel screws for larger instruments; however, such permanent attachment shall not be on an ordinarily replaceable part or in an area that will be subject to unintended overuse fatigue. Make the tag plainly visible.

2.03 FLOW COMPONENTS

A. Magnetic Flow Meter

1. The magnetic flow meter shall consist of a flow tube FE and a converter FIT, complete with interconnecting cables.

2. The magnetic flow meter shall be of the low frequency electromagnetic induction type and shall produce a DC pulse signal directly proportional and linear to the flow rate, with the duration not less than 100 milliseconds. Complete zero stability shall be an inherent characteristic of the metering system. Meters requiring field zero adjustment will not be acceptable. The meter accuracy shall not be affected by changes in fluid pressure, temperature, viscosity, or conductivity.

3. Accuracy

a. The maximum error of the complete metering system including flow element and flow indicating transmitter shall be 0.30% of actual flow rate (in specified units) and readout over the range of full scale velocity settings from 1 to 30 feet per second. Variations in temperature, voltage, and frequency within the ranges listed herein shall not affect the overall measuring accuracy.

b. The flow meter shall not require more than three diameters of straight pipe length from the center of the meter to upstream or downstream obstructions to obtain specified accuracies.

4. Flow Element (FE)

a. The flow element shall be based on a pipe spool with ANSI class 150 flange connections or be flangeless construction as required by mechanical drawings. Class 300 flanges shall be provided where shown

or when the pressure and temperature of the process fluid exceeds the rating of a 150 lb flange. The flow element size shall be as shown in the mechanical drawings and listed in the Instrumentation Schedule. Flange type and bolt pattern shall be coordinated with the mechanical Contractor prior to submittal.

b. The flow element shall have Hastelloy C4 coil and grounding electrodes.

c. Stainless steel grounding rings shall be provided at both ends of the flow element for all flowmeter applications. Grounding rings shall be manufactured from stainless steel, 2 mm thickness with grounding tab for electrical wire connection, and fit within the flange bolt circle. Grounding ring shall be self centering within pipe.

d. The flow element internal liner material shall be Teflon, polyurethane or hard rubber, unless recommended otherwise by the manufacturer for the application and approved.

e. NEMA rating as defined in the Instrumentation Schedule.

5. Flow Indicating Transmitter (FIT)

a. The electronic flow indicating transmitter shall either be integral or mounted remotely from flow tube as shown on Project Drawings.

b. The electronic transmitter shall be provided in a NEMA rated enclosure.

c. The transmitter shall be interchangeable with all sizes of flow elements and shall be field replaceable (without replacing flow element) in the event of transmitter failure.

d. The transmitter shall be microprocessor controlled, utilizing digital signal processing with automatic zero correction to provide a linear 4-20 mA signal proportional to flow rate.

e. The transmitter shall incorporate a high impedance amplifier of 100,000 Megohms or greater, eliminating the need for electrode cleaning systems.

f. The transmitter shall contain a self test mode to allow the operator to manually simulate the output 4-20 mA signal to any value between 0% and 100% to check out any driven devices in the loop.

g. Rate indicator and totalizer: An alphanumeric LCD backlit display shall be provided to continuously display the flowrate and totalizer with units and all programming functions.

h. All programming configuration of the flowmeter shall be completed through the transmitter's pushbutton interface. A communication device shall not be necessary to configure the flow transmitter.

i. PC based software shall be available and included for configuration and troubleshooting. Connection to flowmeter shall be via computer USB port and include interface cables as required.

j. The transmitter shall be designed for operation from a power source of 120 volts AC, with a power consumption of less than 20 watts. The flow element shall be powered from the transmitter.

k. The transmitter shall operate continuously without fault in an ambient temperature range from 14 to 140 °F. The flowmeter shall be suitable for operation in direct sunlight without the use of a sunshade. If a sunshade becomes required after installation for any operational reason, one shall be furnished and installed free of charge.

l. The following configurable parameters shall be provided at a minimum:

1) Field adjustable flow signal dampening.

2) Low flow cutoff (forces zero flow signal) between 0.0-5.0% of full scale rate.

3) Empty pipe detection (forces zero flow signal) if the pipe is not full.

4) Selection for forward/reverse/both flow directions.

6. Flow Indicating Transmitter (FIT) I/O Interface

a. Flow Signal: 4-20 mA signal proportional to the flow. The signal shall be field configurable for the flow calibration specified and others within the flow tube accuracy range. The flow signal shall be capable of measurement for forward and reverse flows combined by offsetting zero to mid scale (12 mA).

b. Flow Totalization Pulse: The Flowmeter shall feature a pulse output that is scaled to 1000 gallons per pulse unless otherwise shown.

1) Provide solid state interfacing relay within control panel (as required) between flow meter voltage output and PLC discrete voltage input. Provide any necessary interfacing devices to make flow meter pulse duration and output rate compatible with PLC discrete pulse input rate.

c. Meter Positive Zero Return: This contact input shall force the flow reading and output flow signal to zero flow.

d. Flow direction digital output: Open collector transistor or relay output capable of driving 24 volt interface relay up to 100 mA. Output shall be configurable for either forward or reverse flow directions.

7. If the flow indicating transmitter (FIT) is shown in the Contract drawings to be mounted remotely from the flow element (FE), the manufacturer shall provide all cabling between flow element and flow indicating transmitter.

8. All mounting hardware and/or devices necessary to complete the installation shall be provided by the manufacturer at no additional cost to the Owner.

9. The meter shall be hydraulically calibrated at a facility located in the United States and the calibration shall be traceable to the National Bureau of Standards. A certified copy of the calibration test results shall be submitted to the Owner prior to shipment of the meter.

10. The magnetic flowmeter shall be Endress and Hauser Proline Promag L400, Krohne Enviromag 2100, Rosemount 8705, or approved equal.

2.04 INSTRUMENTATION SUN PROTECTION

A. Instrument Sunshade

1. Provide wall mount bracket or pole mounted sunshade where instruments are exposed to direct sunlight.

2. Sunshades shall be fabricated from stainless steel with hinged rubber flap on front for viewing of displays and performing calibrations.

3. Sunshade shall be custom manufactured for the instrument protected and sized such that there is 3” free space around sides and front of instrument.

PART 3 - EXECUTION

3.01 WORKMANSHIP

A. The Contractor shall employ personnel who are skilled and experienced in the installation and connection of equipment defined in this Section.

B. Verify that all equipment and materials fit properly.

C. All instrumentation configuration, programming and calibration shall be completed prior to the start of field tests.

D. Equipment without approved submittals shall not be installed.

E. All equipment shall be properly stored indoors while awaiting installation. Protect installed equipment from construction debris or mishaps. The Contractor will replace any equipment that is not in new condition at the time of installation and/or start-up.

F. Perform work to remedy non-compliant installations after inspection.

3.02 INSTALLATION

A. Install and supply all products necessary to provide an operational instrumentation system. This shall include the following:

1. Contract Drawings are intended to show the basic functional requirements of the instrumentation system. Insufficient detail does not relieve the Contractor from the responsibility to provide a complete and functioning system. If additional detail or clarification is required, the Contractor shall request such information prior to installation.

2. Provide relays, signal converters, isolators, boosters, power conditioners, circuit cards, and other miscellaneous devices as required for the compatible and functional interface.

3. Provide analog loop isolators where required to eliminate "ground loops."

4. The instrumentation and accessory equipment shall be installed in accordance with the manufacturer's instructions and located as shown on the Drawings or as approved. When manufacturer's installation literature specifies a particular location or orientation in a process line due to measurement accuracy considerations, the installation shall be in conformance with the manufacturer's instructions.

B. Instrument installation methods.

1. Install instruments at the location shown on the Plans or approved. Instruments enclosures shall be NEMA rated for the installed location.

2. Install level and plumb.

3. All instruments shall be provided with floor stands or wall brackets as shown in installation details or as required for functional installation.

4. Mounting stands shall be custom manufactured of aluminum channel with base plate unless otherwise noted in installation detail.

5. Mounting channels (unistrut), and spacers shall be galvanized steel above ground outdoors and stainless steel below ground (wetwell), unless otherwise noted in installation details.

6. All screws, bolts and anchors shall be stainless steel.

C. Wiring and raceway installation methods.

1. Terminal blocks shall be provided at all instrument cable junctions and all wires shall be identified at such junctions.

2. Instrumentation wiring shall be run without splices between instruments, terminal boxes, or panels.

D. Wiring, grounding, and shielding methods.

1. The following practices shall be observed unless modified by manufacturer's standards:

2. Each electronic equipment chassis shall be grounded to power ground.

3. Shielded twisted pair, shielded triad, or manufacturer supplied cables only shall be used for analog signals and communications signals.

4. Drain wire of shielded cables used for analog inputs to the PLC shall be connected at the PLC unit only. Shield shall be isolated from ground at all other termination points including transmitters.

5. Drain wire of shielded cables used for analog outputs from the PLC shall be connected at signal receiving device only. Shield shall be isolated from ground at all other termination points.

6. If electrical interference noise is imposed on DC status and alarm signals, then they shall be re-routed or wire changed to shielded twisted pair cables.

7. Each shield drain wire which is not connected to ground shall be cut off covered with a heat shrink insulating boot at cable jacket end. Shields shall be connected together at each transition from one cable to another for an effectively continuous shield circuit.

3.03 SUPPLIER SERVICES

A. The Contractor shall be responsible for each supplier of equipment to provide the following minimum services for each type of instrument supplied. Each supplier shall provide a qualified instrumentation field technician to perform services listed herein. Contractor shall supply all calibration materials necessary to commission unit and shall not use any consumable materials that are intended to be furnished for the first period of use.

1. Advise and instruct Contractor on proper installation requirements.

2. Inspect, calibrate, test, and place equipment in operation. Calibrate instruments to values as shown in the instrument index or as noted herein. If instrument spans are required to change (within instrument range) during startup for process reasons, the Contractor shall change them as directed by the Engineer.

3. Programmable devices shall be programmed and tested prior to startup. Programming shall be adjusted or changed as directed by the Engineer at any time prior to final acceptance.

4. Perform testing in the presence of Engineer.

5. Visit the project site as often as required and spend as much time as necessary to ensure accurate and operational instrumentation.

6. Provide training as specified in 3.04 – FIELD ASSISTANCE.

B. The Contractor shall coordinate with each supplier of instrumentation to confirm that primary elements are provided in a timely manner, meeting critical path scheduling. The Contractor shall coordinate process connection size, equipment size, and material type when applicable and oversee the installation, calibration, and acceptance testing.

3.04 FIELD ASSISTANCE

A. The instrument supplier shall provide a minimum of one (1) hour of field training to instruct Owner personnel in the use, operation, calibration, programming, and maintenance on each type of "field" instrument listed in Instrumentation Schedule.

3.05 SPARE PARTS

A. Contractor shall supply all calibration materials necessary to commission unit and shall not use any consumable materials that are intended to be handed over to the Owner as defined in the instrument specifications.

END OF SECTION

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SECTION 17401

PROCESS CONTROL SYSTEM GENERAL PROVISIONS

PART 1 - GENERAL

1.01 SCOPE

A. This section specifies general requirements applicable to Division 17 Sections of these project specifications for the process control, instrumentation, communication, network, software, and signal systems. This work will be referenced as the Process Control System (PCS).

B. System Overview. Detailed requirements are in individual related specification sections.

1. Field Instrumentation:

a. New field instruments.

2. Process Control Hardware:

a. New PLC75001 mounting panel including:

1) Programmable Logic Controller (PLC).

2) Network Switch.

3) Panel appurtenances.

3. Process Control Software, Programming, and Integration:

a. CONTRACTOR shall retain the services of the Owner's preferred integrator/programmer. Contact Jack Miller, JM Integration LLC, 888-536-8623.

4. Communications and Networking:

a. Fiber optic network backbone is existing. Extend fiber jumper to ethernet switch in PLC75001; copper Ethernet communications to PLC hardware.

C. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to furnish, install, calibrate, test, start-up and place in satisfactory operation a complete PCS.

D. The process instrumentation and control Work includes, but is not limited to, the following:

1. Field-mounted instruments and devices. Refer to Section 16940, Instrumentation.

2. Panel-mounted instruments and devices.

3. Uninterruptible power supply.

4. Panel environmental controls.

5. Local area network communication hardware and software required for interfacing various systems to provide a fully integrated system.

6. All startup, testing, training, and coordination.

7. Submittal development and updates.

E. PCS shall monitor, store, display, and log process and equipment operating information; perform various process control functions, manually and automatically; and generate various reports. Refer to Section 17491, for process control functions.

F. The Contract Documents describe the required PCS and PCS functions and operational requirements.

G. Coordination:

1. Process Controls:

a. Providing instruments and controls are part of the Work by CONTRACTOR's instrumentation and controls (I&C) Subcontractor. All startup and testing shall be coordinated with the OWNER.

b. Some panels and equipment are furnished under other Specification Sections of this Contract. Coordinate with Suppliers of these panels and equipment to provide fully functional system in accordance with the Contract Documents that interfaces with existing central computer system.

c. Computer system input/output list identifies inputs and outputs required and is part of the Contract Documents. Input/output list is for coordinating signals between equipment provided by other Suppliers and PCS Supplier and identifying signals to be programmed by CONTRACTOR's configuration Subcontractor.

d. For existing PLC cabinet PLC70299, added inputs and outputs (I/O) can be obtained from the P&ID. No new I/O modules need to be installed in PLC70299. Added I/O will be landed on spare I/O points.

e. For existing PLC cabinet PLC12199, added analog inputs and outputs (I/O) will be landed on spare I/O points. Discrete I/O for the washwater pumps will be reused.

1) Washwater Pond 1 Pump 1 Speed Feedback – Rack 3, Slot 13, Channel 3

2) Washwater Pond 1 Pump 2 Speed Feedback – Rack 3, Slot 13, Channel 4

3) Washwater Pond 2 Pump 1 Speed Feedback – Rack 3, Slot 13, Channel 5

4) Washwater Pond 2 Pump 2 Speed Feedback – Rack 3, Slot 13, Channel 6

5) Washwater Pond 1 Pump 1 Speed Control – Rack 3, Slot 16, Channel 0

6) Washwater Pond 1 Pump 2 Speed Control – Rack 3, Slot 16, Channel 1

7) Washwater Pond 2 Pump 1 Speed Control – Rack 3, Slot 16, Channel 2

8) Washwater Pond 2 Pump 2 Speed Control – Rack 3, Slot 16, Channel 3

f. For existing PLC cabinet PLC31299, added analog inputs and outputs (I/O) will be landed on spare I/O points. Discrete I/O for the primary scum pumps will be reused.

1) Primary Scum Pump 1 Speed Feedback – Rack 1, Slot 5, Channel 0

2) Primary Scum Pump 2 Speed Feedback – Rack 1, Slot 5, Channel 1

3) Primary Scum Pump 3 Speed Feedback – Rack 1, Slot 5, Channel 2

4) Primary Scum Pump 4 Speed Feedback – Rack 1, Slot 5, Channel 3

5) Primary Scum Pump 1 Speed Control – Rack 1, Slot 13, Channel 0

6) Primary Scum Pump 2 Speed Control – Rack 1, Slot 13, Channel 1

7) Primary Scum Pump 3 Speed Control – Rack 1, Slot 13, Channel 2

8) Primary Scum Pump 4 Speed Control – Rack 1, Slot 13, Channel 3

2. With CONTRACTOR, Supplier shall assume the responsibility for adequacy and performance of materials and equipment provided under this Section.

3. To the greatest extent possible, provide I&C materials and equipment from a single manufacturer.

4. PCS Supplier's Responsibilities:

a. Preparing all process control equipment submittals in accordance with the Contract Documents.

b. Proper interfacing of instrumentation and control equipment with field equipment, instruments, devices, panels, and required interfacing with the Site's electrical system.

c. Review and coordination with manufacturers, other Suppliers, and other contracts of Shop Drawings and other CONTRACTOR submittals for equipment, valves, piping, and appurtenances for ensuring proper interfacing of hardware, and locations and installation requirements of inline devices and instrument taps.

d. Direct, detailed oversight of installation of instruments, panels, consoles, cabinets, wiring and other components, related wiring and piping connections, and PCS programming and configuration.

e. Calibrating, source quality control, field quality control, and start-up of the system.

f. Responsibility for correction period obligations for the PCS.

g. Training operations and maintenance personnel in operation and maintenance (including calibration and troubleshooting) of the PCS.

1.02 REFERENCED SECTIONS

A. The following Sections are referenced in this Section

1. Section 01782 – Operation and Maintenance Information.

2. Section 16940 – Instruments.

3. Section 17403 – Process Control System Start-up and Field Testing.

4. Section 17491 – Process Control Descriptions.

1.03 REFERENCES

A. Abbreviations:

1. AI: Analog Input

2. AO: Analog Output

3. dBm: decibel-milliwatts

4. DI: Digital Input

5. DO: Digital Output

6. CPU: Central Processing Unit

7. ESW: Network Ethernet Switch

8. HMI: Human Machine Interface

9. OIT: Operator Interface Terminal (usually referring to a panel-mounted touchscreen device)

10. PLC: Programmable Logic Controller

11. PCS: Process Control System

12. RTU: Remote Terminal Unit

13. SCADA: Supervisory Control and Data Acquisition

14. SI: Systems Integrator

B. Definitions:

1. General: Definitions of terminology related to Instrumentation and Industrial Electronic Systems used in the specifications as defined in IEEE 100, ISA S51.1, and NEMA ICS 1.

2. Data sheets: Data sheets refer to ISA S20 or ISA TR20.00.01, as referenced within ISA-20-1981 specification.

3. Two-wire transmitter: A transducer that derives operating power supply from the signal transmission circuit and requires no separate power supply connections. A two-wire transmitter produces a 4- to 20-milliampere current regulated signal in a series circuit with a 24-volt direct current (VDC) driving potential and a maximum circuit resistance of 600 ohms.

4. Four-wire transmitter: A transducer that derives operating power from separate power supply connections. A four-wire transmitter produces a 4- to 20-milliampere current regulated signal in a series circuit with a maximum circuit resistance of 600 ohms. Four-wire transmitters typically require 120-volt alternating current (VAC) or 24VDC input power supply.

5. Galvanic isolation: An electrical node having no direct current path to another electrical node. Galvanic isolation refers to a device with electrical inputs and/or outputs that are isolated from ground, the device case, the process fluid, and separate power supply terminals. Inputs and/or outputs may be externally grounded without affecting the characteristics of the devices or providing a path for circulation of ground currents.

6. Panel: An instrument support system that may be a flat surface, partial enclosure, or complete enclosure for instruments and other devices used in process control systems including consoles, cabinets, and racks. Panels provide mechanical protection, electrical isolation, and environmental protection from dust, dirt, moisture, and chemical contaminants that may be present in the atmosphere.

7. Systems Integrator: A firm engaged in the business of detailed control system design and engineering, instrumentation component purchase, system and panel assembly, control device programming, and implementing of the specified process control and industrial automation systems.

8. Signal Types:

a. Analog, low level: Signal with full output level of 100 millivolts or less including thermocouples and resistance temperature detectors.

b. Analog, high level: Signals with full output level greater than 100 millivolts but less than 30 volts, including 4 to 20 mA transmission.

c. Audio signals, high level: Audio signals exceeding plus 4 dBm, including loudspeaker circuits.

d. Digital code: Coded information from the output of an analog-to-digital converter or digital transmission terminal.

e. Discrete control or events: Dry contact closures and signals monitored by solid-state equipment, relays, or control circuits.

f. Discrete control or events, low voltage: Dry contact closures and signals monitored by solid-state equipment, relays, or control circuits operating at less than 30 volts and 250 milliamperes.

g. Modulated signals: Signals from modems or low-level audio signals. Normal signal level: plus 4 dBm to minus 22 dBm. Frequency range is 300 to 10,000 hertz.

h. Pulse frequency: Counting pulses emitted from speed or flow transmitters.

i. Radio frequency (RF) signals: Continuous wave alternating current signals with fundamental frequency greater in a range of 310 kilohertz to 300 gigahertz.

9. Drawing Types:

a. Elementary or schematic diagram:

1) Use graphic symbols to indicate the electrical connections and functions of a specific circuit arrangement. The schematic diagram facilitates tracing of the circuit and its functions without regard to the actual physical size, shape, or location of the component devices or parts.

2) Indicate connections to internal and external components connected to the panel. Note which devices are external to the panel.

3) Depicted in ladder logic format.

4) Indicates contact arrangement of internal and external devices such that circuits are complete and match equipment furnished.

5) Indicates equipment designations/tag numbers to match contract drawings and P&IDs.

b. Block diagram:

1) A diagram of a system, instrument, computer, or program in which selected portions are represented by annotated boxes and interconnecting lines.

c. Network block diagram: (Not Applicable)

d. Connection Diagram:

1) Purpose is to show wiring requirements between internal panel components.

2) Show components of a control panel in an arrangement similar to the actual panel layout.

3) Indicate internal wiring between components.

4) Show terminal blocks used for internal wiring and field wiring, with identification as such.

5) Indicate insulation color code, signal polarities, wire numbers, and terminal block numbers.

e. Interconnection Diagram:

1) Purpose is to show wiring requirements between panels, standalone devices, components, and instruments.

2) Indicate wire numbers, cable numbers, raceway numbers, terminal box numbers, terminal block numbers, panel numbers, and field device tag numbers.

3) Show external connections between terminals of equipment and outside points, such as motors and auxiliary devices.

4) Indicate references to connection diagrams that interface to the interconnection diagrams.

5) Interconnection diagrams are to be of the continuous line type. Show bundled wires as a single line with the direction of entry/exit of the individual wires clearly shown. Wireless diagrams and wire lists are not acceptable.

6) Show termination of each cable. Clearly mark each termination point. Show each wire's identification as actually installed. The wire identification for each end of the same wire shall be identical. Identify devices and equipment.

7) Depict terminal blocks as actually installed and identified in the equipment with individual terminal identification.

8) Indicate external jumpers, shielding, and grounding terminations.

9) Indicate polarities for signal and DC circuit.

10) Depict spare wires and cables installed or slated for installation.

f. Arrangement, layout, or outline drawings:

1) Show the physical space and mounting requirements of a piece of equipment.

2) Indicate ventilation requirements and space provided for connections or the location to which connections are to be made.

3) Indicate clearance requirements for ventilation and access.

4) Show the dimensioned external and interior control panel views with components and Bill of Material.

g. Loop diagrams:

1) Prepared per ISA 5.4.

2) Show device element wiring of the system. Indicate device terminations, with terminal numbers.

3) Show circuits for hardwired device interlocks.

4) Show circuit cable and wire cable numbers, signal polarities, and terminal block numbers.

5) Show connection to power supplies. Include alternating current (AC) and direct current (DC) power supplies and circuit information for instruments furnished under this contract.

6) Indicate controller or I/O card address/node, rack, slot, and point wiring terminals.

7) Show power supplies for signal loops. Indicate in which panel components reside and power originates with circuit numbering/name. Where new/modified loops connect to an existing power supply, show the existing power supply name, location, and circuit.

8) Indicate surge protection type, manufacturer, and model number (i.e., types include floating ground reference or grounded reference).

9) Show new and modified terminal blocks with numbering in new and existing panels.

10) Indicate signal loop grounding terminations.

11) Indicate loop numbers, wire numbers, and cable numbers used in field wiring and panel wiring.

12) Indicate field element being controlled or monitored (i.e., normally open contact from relay CR17, or FIT 365).

C. Standards referenced in this Section:

1. ANSI/ASQ Z1.4, Sampling Procedures and Tables For Inspection By Attributes.

2. IEEE 100, Standard Dictionary of Electrical and Electronics Terms

3. ISA 5.4, Instrument Loop Diagrams.

4. ISA 20, Specification Forms for Process Measurement & Control Instruments, Primary Elements & Control Valves.

5. NEMA ICS 1, Industrial Control and System: General Requirements

6. NFPA 79, Electrical Standard for Industrial Machinery.

1.04 QUALITY ASSURANCE

A. Qualifications:

1. Supplier:

a. Shall be financially sound with at least ten years of continuous experience in designing, implementing, supplying, and supporting process control systems for municipal wastewater facilities comparable to PCS required for the Project, relative to hardware, software, cost, and complexity.

b. Shall have record of successful process control system equipment installations. Upon ENGINEER's request, submit record of experience for at least five projects, each with the following information: project name, owner name and contact information, name and contact information for contractor, name and contact information for engineer, contract value of process control systems Work for which Supplier was responsible.

c. Shall have at time of Bid experienced engineering and technical staff capable of designing, supplying, programming, implementing, and supporting the instrument and control system and complying with submittal and training requirements of the Contract Documents.

d. Shall be capable of training Owner operations and maintenance personnel in PCS applications, and in operating, programming, and maintaining the control system and equipment.

e. Shall have UL-508A approved panel shop.

f. Supply and support system hardware components and software packages of fully developed and field-proven standardized designs that are not a highly unique, custom, or one-of-a-kind systems.

g. Possess a thorough, working knowledge of wastewater pumping processes and control philosophy in accordance with standard practices of the wastewater industry.

h. Possess and maintain a documented program of failure analysis.

2. Manufacturers:

a. Manufacturers of instrumentation and control equipment furnished for the PCS shall be experienced producing similar equipment and shall have the following qualifications:

1) Shall manufacture instrumentation and control system components that are fully-developed, field-proven, and of standardized designs.

2) Shall have system of traceability of manufactured unit through production and testing in accordance with ANSI/ASQ Z1.4.

3) Shall have guaranteed availability clause (99.99 percent, minimum for one year) for microprocessor-based components and appurtenances.

4) Shall have documented product safety policy relevant to materials and equipment proposed for the Work.

B. Component Supply and Compatibility:

1. PCS components shall be furnished by a single Supplier who shall have responsibility for furnishing a complete and integrated system. Supplier who shall have responsibility for adequacy and performance of all items furnished.

2. Supplier shall prepare, or shall review and approve, all Shop Drawings and other submittals for the PCS.

1.05 SUBMITTALS

A. Comply with Section 01330.

B. Action Submittals: Submit the following:

1. Shop Drawings:

a. Panels, Consoles, and Cabinets:

1) Layout drawings that include:

a) Front, rear, and internal panel views to scale.

b) Tag number and functional name of components mounted in and on panel, console, or cabinet, as applicable.

c) Product information on panel components.

d) Nameplate location and legend including text, letter size and colors to be used.

e) Location of anchorage connections.

f) Location of external wiring and piping connections.

g) Mounting and installation details, coordinated with actual application.

h) Calculations substantiating panel heating and cooling provisions proposed.

i) Subpanel layouts and mounting details for items located inside control panels.

2) Product information on panel components including:

a) Manufacturer’s product name and complete model number of devices being provided, including manufacturer’s name and address.

b) Description of construction features.

c) Performance and operation data.

d) Service requirements.

3) Wiring and piping diagrams, including the following:

a) Name of each panel, console, or cabinet.

b) Wire sizes and types.

c) Terminal strip and terminal numbers.

d) Wire color coding.

e) Functional name and manufacturer's designation for components to which wiring and piping are connected.

f) Lightning and surge protection grounding.

4) Electrical control schematics in accordance with NFPA 79. Control schematics shall be in accordance with convention indicated in Annex D of NFPA 79. Standardized wiring diagrams that do not accurately reflect actual wiring to be furnished are unacceptable. Tables or charts for describing wire numbers are unacceptable.

5) Stock list or bill of materials for each panel including tag number, functional name, manufacturer's name, model number and quantity for components mounted in or on the panel or enclosure. Stock list or bill of materials shall be included in the Shop Drawings CAD file for the panel or enclosure.

6) Power supply power loads and sizing calculations.

7) Cooling and heating loads and sizing calculations.

b. Complete point-to-point interconnection wiring diagrams of field wiring associated with the system. Diagrams shall include the following:

1) Field wiring between each equipment item, panel, instruments, and other devices, and wiring to control stations, panelboards, and motor starters. Some of this equipment may be specified in other Divisions. CONTRACTOR is responsible for providing complete point-to-point interconnection wiring diagrams for control and monitoring of that equipment.

2) Numbered terminal block and terminal identification for each wire termination.

3) Identification of assigned wire numbers for interconnections. Assign each wire a unique number.

4) Schedule showing the wiring numbers and the conduit number in which the numbered wire is installed.

5) Junction and pull boxes through which wiring will be routed.

6) Identification of equipment in accordance with the Contract Documents.

2. Supervisory Control and Data Acquisition (SCADA) System:

1) Submit the following general information:

a) Detailed block diagram showing system hardware configuration and identifying model numbers of system components.

2) Hardware:

a) Layout drawings showing front, rear, end, and plan views to scale of equipment, I/O components, power supplies, and peripheral devices.

b) Equipment ventilation and cooling requirements.

c) Equipment backup power requirements.

d) Interconnection diagrams, including termination details, cable identification list, and cable length.

e) Drawings showing equipment layout.

f) Installation requirements, instructions, and recommendations.

3) Software: (Not Applicable)

4) System I/O Loop Wiring Diagrams:

a) Rack numbers, module type and slot number, and module terminal point numbers. Include location and identification of intermediate panel and field terminal blocks and terminal numbers to which I/O wiring and power supply wiring is connected. Identify power supply circuits with designation numbers and ratings.

b) Wiring types, wire numbers, and color coding.

c) Designation of conduits in which field I/O wiring will be installed.

d) Location, functional name, tag numbers and manufacturer's module numbers of panel and field devices and instruments to which I/O wiring will be connected.

e) Prepare loop wiring diagrams in accordance with ISA 5.4.

3. Product Data:

a. Product data for field instruments in accordance with requirements for Shop Drawings in this Section.

b. Product data for panels, consoles, and cabinets in accordance with requirements for Shop Drawings in this Section.

c. Product data for field wiring and piping provided for instrumentation and control service and not included under other Sections or contracts.

d. Product data for SCADA system hardware.

4. Samples: (Not Applicable)

5. Factory Acceptance Test Procedure: Submit proposed procedures for factory testing required to comply with the Contract Documents. Test procedure shall include the following:

a. Visual inspection of components and assembly.

b. Description of hardware operational testing.

c. Description of software demonstration.

d. Description of testing equipment to be used.

e. Sign-off sheets to be used at time of testing.

6. Site Acceptance Test Procedure: Submit proposed procedures for on-site startup and field testing required to comply with the Contract Documents. Submit written procedure for start-up 60 days prior to starting system checkout. Test procedure shall include the following:

a. Visual inspection of components and assembly.

b. Description of hardware operational testing.

c. Description of testing equipment to be used.

d. Sign-off sheets to be used at time of testing.

e. Coordination with OWNER and other suppliers.

f. Identify Plant or existing system outages required.

C. Informational Submittals: Submit the following:

1. System Software Documentation: (Not Applicable)

2. Manufacturer's Instructions:

   a. Shipping, handling, storage, installation, and start-up instructions.

   b. Templates for anchorage devices for materials and equipment that will be anchored to concrete or masonry.

3. Source Quality Control Submittals:

   a. Results of factory testing.

4. Special Procedure Submittals:

   a. Notification to OWNER and ENGINEER at least 14 days before readiness to begin system checkout (i.e. Site Acceptance Test) at the Site. Schedule system checkout on dates acceptable to OWNER and ENGINEER.

5. Field Quality Control Submittals:

   a. Submit the following prior to commencing system checkout and start-up.

      1) Completed calibration sheets for each installed instrument showing five-point calibration (zero, 25, 50, 75, 100 percent of span), signed by factory-authorized serviceman.

   b. Field calibration reports.

   c. Field testing reports.

6. Supplier's Reports:

   a. Installation inspection and check-out report.

   b. Submit written report of results of each visit to Site by Supplier's service technician, including purpose and time of visit, tasks performed, and results obtained. Submit within two days of completion of visit to the Site.

7. Qualifications Statements:

   a. I&C Subcontractor.

   b. Configuration Subcontractor.

   c. I&C Supplier.

   d. Manufacturers, when required by ENGINEER.

   e. Include a list of proposed personnel committed to assignment of the Project. List shall include project manager, project engineer, field representative, local service representative, and sales representative(s). Provide similar information for all categories (e.g. I&C Supplier, Configuration Supplier) if separate. Indicate addresses of personnel not based at office nearest to the Site.

D. Closeout Submittals: Submit the following:

1. Operations and Maintenance Data:

   a. Submit in accordance with Section 01782.

   b. Include complete up-to-date system software documentation. Provide electronic copies in PDF format.

   c. Provide Final Process Control Descriptions that shall capture the final state of the programmed control system including modifications agreed upon by CONTRACTOR, ENGINEER, and OWNER up to project closeout. Descriptions shall include all SCADA HMI screens and describe how the operator interacts with the screen.

   d. Provide SCADA system and PLC backup configuration files without password protections to allow OWNER to make changes if necessary.

2. Record Documentation:

a. Prepare and submit record documents in accordance with Section 01782.

b. Revise all PCS Shop Drawings to reflect as-built conditions in accordance with the following.

1) Use "as-built" updates of approved Shop Drawings and submittals in operation and maintenance manuals.

2) Half-size black line prints of wiring diagrams applicable to each control panel shall be placed in clear plastic envelopes inside a suitable print pocket or container inside each control panel.

3) Submit drawings of the point-to-point interconnection wiring diagrams updated to reflect final as-built equipment information and as-installed field installation information.

c. Provide CAD files for all PCS Shop Drawings.

E. Maintenance Materials Submittals: Submit the following:

1. Spare Parts and Test Equipment

a. General

1) Furnish the spare parts and test equipment in accordance with the Contract Documents, identical to and interchangeable with similar materials and equipment provided for the PCS under the Contract.

2) Provide source quality control for spare parts as part of factory testing prior to shipment of process control system equipment.

2. Software: (Not Applicable)

1.06 DELIVERY, STORAGE, AND HANDLING

A. Prior to packaging, each manufacturer or Supplier shall securely attach tag number and instructions for proper field handling and installation to each instrument.

PART 2 - PRODUCTS

2.01 PCS – GENERAL PROVISIONS FOR PRODUCTS

A. General:

1. Products shall be new and free from defects.

2. Similar control system components and devices used throughout the work shall be manufactured by one firm, where possible.

3. The components, modules, devices, and control system equipment shall be recognized industrial-quality products. Recognized commercial- or office-grade products are prohibited.

4. Use electronic equipment of solid-state construction with printed or etched circuit boards of glass epoxy of sufficient thickness to prevent warping.

5. Equipment supports: shall be 316L stainless steel, as shown or specified.

6. All electrically-powered equipment and devices shall be suitable for operation on 115-volt plus-or-minus 10 percent, 60 Hertz plus-or-minus two Hertz power. If different voltage or closer regulation is required, provide suitable regulator or transformer.

7. Provide appropriate power supplies for all two-wire transmitters, loops for monitoring discrete inputs and necessary outputs. Install power supplies mounted in enclosures, and install in appropriate control room or field panel.

8. Power supplies shall be suitable for minimum of 130 percent of the maximum simultaneous current draw.

9. Provide power on-off switch or air circuit breaker for each item requiring electrical power.

10. Provide isolation transformers, line voltage regulators and power distribution panels for the distributed digital portions of the PCS to eliminate electrical noise and/or transients entering on the primary power line.

11. Unless otherwise shown or indicated in the Contract Documents, control system shall be furnished to use 4 to 20 mADC analog signals.

12. Provide signal converters and repeaters where required. Analog inputs to PLC shall be through appropriate repeaters to provide signal isolation where series-looped with other devices and to allow loop to maintain integrity even when PLC is out of service. Power supplies shall be adequate for signal converter and repeater loads.

13. Signals shall be isolated from ground.

14. Signals shall not have a transient DC voltage exceeding 300 volts over one millisecond nor a DC component over 300 volts.

15. PCS and associated input/output wiring will be used in a facility environment where there can be high-energy AC fields, DC control pulses, and varying ground potentials between the sensors/transducers or input contact locations and PCS components. PCS shall be adequate to provide proper protection against interferences from all such possible situations.

16. PCS components shall be heavy-duty types, suitable for continuous service in a municipal water treatment plant environment. Furnish products that are currently in production at the time products are shipped from the factory. All equipment furnished shall be of modular construction and be capable of field expansion through installation of plug-in circuit cards and additional cabinets as necessary. Logic and control loops shall be fail-safe.

17. PCS components shall return automatically to accurate measurement within 15 seconds upon restoration of power after a power failure, and when transferred to standby power supply.

18. Relays with interconnections to field devices shall be wired through terminal blocks.

19. All components furnished, including field-mounted and rear-of-panel instruments, shall be tagged with the item number and nomenclature as shown and the instrument index in the Contract Documents or, as applicable, the "data sheets" that are part of the Contract Documents.

20. Wiring splicing is not acceptable.

B. Software: (Not Applicable)

C. Nameplates:

1. Nameplate wording may be changed without additional cost or time if changes are made prior to commencement of engraving. Confirm changes with ENGINEER.

2. Attach nameplates to support hardware with a minimum of two self-tapping type 316 stainless steel screws in a readily visible location so the nameplate will remain to identify the service when the device is removed. Attach field instrument nameplates with braided stainless steel straps where not stand-mounted.

D. Environmental Conditions:

1. PCS and its components shall be designed and constructed for continuous operation under the following temperature and humidity conditions:

a. Equipment and Devices Installed in Control Rooms:

1) Ambient Temperature: 60 degrees F to 80 degrees F normal range; and 40 degrees F to 105 degrees F occasional maximum extremes.

2) Relative Humidity: 80 percent, normal; 95 percent maximum.

b. Equipment and devices installed at indoor locations (other than control rooms) for digital processing equipment hardware, control panels, and instruments:

1) Ambient Temperature: 25 degrees F to 120 degrees F.

2) Relative Humidity: 98 percent maximum.

c. Equipment and Devices Installed Outdoors:

1) Ambient Temperature: -20 degrees F to 120 degrees F.

2) Relative Humidity: 100 percent maximum.

E. Refer to Division 17 Sections of these project specifications for product requirements for materials and equipment that are part of the PCS.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General:

1. Install equipment in locations that are accessible for operation and maintenance services.

2. Installation, calibration, settings, and testing procedures are specified in this Section 17401, Section 16940, and subsequent sections of the Electrical Divisions.

B. Field Equipment:

1. Space instruments and cabinets from concrete walls by 5/8 inch with framing channel between instrument or cabinet and wall. Add supports to block wall to avoid damage to the wall.

2. Design support systems, including panels, in accordance with the Structural Drawings to prevent deformation greater than 1/8 inch in any direction under the attached equipment load and under an external load of 200 pounds.

3. In wet or outdoor areas, make conduit penetrations into instrument housing or panels through the bottom (preferred) or side of enclosures to minimize water entry from around or from inside of conduits. Provide conduit hubs for connections and waterproof mastic for moisture sealant.

4. Provide nameplates for field-mounted equipment. Attach nameplates in a readily visible location, but such that if the field device is replaced, the nameplate will remain to identify the service.

3.02 FIELD QUALITY CONTROL

A. Delivery Inspection:

1. Notify the ENGINEER upon arrival of material or equipment to be incorporated into the work. Remove protective covers or otherwise provide access in order that the ENGINEER may inspect such items.

B. Inspection and Installed Tests:

1. Refer to Section 17403.

3.03 CLEANING

A. Execute final cleaning prior to final project assessment.

B. Clean surfaces exposed to view, remove temporary labels, stains, and foreign substances.

C. Replace filters of operating equipment.

D. Remove waste and surplus materials, rubbish, and construction facilities from site.

3.04 MAINTENANCE

A. Maintain and service PCS components for 3 months from date of substantial completion and at least until completion of complete system.

END OF SECTION

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SECTION 17402

PROCESS CONTROL SYSTEM FACTORY TESTING

PART 1 - GENERAL

1.01 SCOPE

A. CONTRACTOR shall provide all labor, materials, equipment, and incidentals as specified and required for factory testing at the process control system manufacturer's facility to verify that system components function properly and comply with the functional and performance requirements of the Contract Documents.

B. Perform factory testing on the following:

1. PLC75001 Mounting Panel, including PLC logic configured in the OWNER's preferred firmware revision.

C. CONTRACTOR shall advise ENGINEER in writing of the scheduled dates for process control systems factory testing; submit such notice not less than 28 days prior to the scheduled start of factory testing.

1. OWNER and ENGINEER will be present at factory testing facility during operational testing of the process control systems at the factory. Presence of OWNER and ENGINEER during testing does not relieve CONTRACTOR from complying with the Contract Documents and does not indicate or imply acceptance of the equipment.

1.02 REFERENCED SECTIONS

A. Section 17401, Process Control System General Provisions.

1.03 SUBMITTALS

A. Action Submittals: Submit the following:

1. Testing Plans:

a. Submit factory test procedures and graphic displays in accordance with Section 17401, Process Control System General Provisions, for all equipment listed in Article 1.01. of this Section. Obtain ENGINEER's acceptance not less than 28 days prior to scheduled start of factory test.

B. Informational Submittals: Submit the following:

1. Source Quality Control Submittals:

a. Written results of factory testing for process control systems. Submit the complete factory test report within two weeks after completion of the factory test.

PART 2 - PRODUCTS

2.01 SOURCE QUALITY CONTROL

A. CONTRACTOR shall perform all factory tests and inspections independently before the scheduled factory acceptance test to maximize efficiency and ensure acceptance.

B. Inspections Prior to Factory Testing:

1. Inspect PLC75001 mounting panel to verify compliance with the Contract documents, approved Shop Drawings, and other approved CONTRACTOR submittals.

2. Inspection shall include, but not be limited to, the following:

   a. Nameplates and tags.

   b. Wire sizes and color coding.

   c. Terminal block contact ratings and numbers.

   d. Panel-mounted equipment and identification.

   e. Internal panel layout.

   f. Proper wiring practices and grounding.

   g. PLC/OIT software and version numbers.

3. Correct materials and equipment that do not comply with the Contract Documents and submittals approved by ENGINEER, and re-inspect until compliance is verified.

C. Factory Tests:

1. System Hardware Operational Testing:

   a. Test each input/output device and component to verify operability.

   b. Test all system hardware components to verify proper operation of the equipment as stand-alone units and as a system. Tests shall include, but are not necessarily limited to, the following:

      1) AC/DC power checks.

      2) Power fail/restart tests, UPS under load and uptime.

      3) Verify that quantity of circuits assigned to power field instruments corresponds to approved Shop Drawings and approved other CONTRACTOR submittals.

   c. Criteria for Acceptance: System hardware operational testing shall acceptably demonstrate that specified and required equipment operations capabilities function properly.

   d. For the factory test required in this Section, simulate field sensors and field instruments using appropriate signal generators, switches, and jumper cables.

2. System Hardware Demonstration (Not Applicable)

   a. CONTRACTOR shall perform and be solely responsible for system hardware demonstration factory test.

   b. All I/O points including spares will be tested.

3. Factory Test Acceptance Criteria:

   a. Do not ship the equipment from the factory until ENGINEER accepts the factory test results submittal.

   b. Modifications, if any, to documentation as a result of the factory tests shall be completed before shipping the control system and updated Shop Drawings shall be included with the shipment.

   c. Should a factory test run fail to comply with the Contract Documents, necessary changes and corrections shall be made and the entire system retested until acceptable results are achieved.

d. Expenses and costs for OWNER and ENGINEER witnessing such retesting shall be paid by CONTRACTOR, including the following:

1) Labor and transportation costs for one person from OWNER and one person from ENGINEER to attend the retesting, to be paid by CONTRACTOR at cost for OWNER employee as mutually agreed upon by OWNER and CONTRACTOR, and for ENGINEER's employee at ENGINEER's standard hourly rates and mileage as invoiced to OWNER as additional services.

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 17403

PROCESS CONTROL SYSTEM
START UP AND FIELD TESTING

PART 1 - GENERAL

1.01 SYSTEM CHECK-OUT AND START-UP RESPONSIBILITIES

A. CONTRACTOR shall provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install all equipment and coordinate all activities necessary to perform check-out and start-up of the equipment.

B. CONTRACTOR shall retain the services of the Supplier to supervise and/or perform check-out and start-up of all system components. As part of these services, the system Supplier shall include for those equipment items not manufactured by him the services of an authorized manufacturers' representative to check the equipment installation and place the equipment in operation. The manufacturers' representative shall be thoroughly knowledgeable about the installation, operation and maintenance of the equipment.

1.02 SYSTEM CHECKOUT AND START-UP

A. CONTRACTOR, under the supervision of the Programmer, and other instrument suppliers as applicable, shall perform the following:

1. Check and approve the installation of all PCS components and all cable and wiring connections between the various system components prior to placing the various processes and equipment into operation.

2. Conduct a complete system checkout and adjustment, including calibration of all instruments, tuning of control loops, checking operation functions, and testing of final control actions. All problems encountered shall be promptly corrected to prevent any delays in start-up of the various unit processes.

3. All existing PCS components shall be reviewed and verified before PCS configuration begins to prevent delays in startup.

B. CONTRACTOR shall provide all test equipment necessary to perform the testing during system checkout and start-up.

C. CONTRACTOR and Supplier shall be responsible for initial operation of monitoring and control system and shall make any required changes, adjustment or replacements for operation, monitoring and control of the various processes and equipment necessary to perform the functions intended.

D. CONTRACTOR shall furnish to the ENGINEER certified calibration reports for field instruments and devices specified in Section 16940, Primary Sensors and Field Instruments, and panel mounted devices specified in Section 17440, Process Control Panel Instruments and Devices, as soon as calibration is completed.

E. CONTRACTOR shall furnish ENGINEER an installation inspection report certifying that all equipment has been installed correctly and is operating properly. The report shall be signed by authorized representatives of both CONTRACTOR and the Supplier.

1.03 INTEGRATED SYSTEM FIELD TEST

A. Following the PCS checkout and initial operation, CONTRACTOR, under the supervision of the Supplier, shall perform a complete system test to verify that all equipment and programmed software is operating properly as a fully integrated system, and that the intended monitoring and control functions are fully implemented and operational. Any

defects or problems found during the test shall be corrected by CONTRACTOR and then retested to demonstrate proper operation.

B. Following demonstration of all system functions, the PCS including field sensors/transducers and instruments shall be running and fully operational for a continuous 48 hour period. The Operational Availability Demonstration specified below shall not begin until the continuous 48 hour integrated system test has been successfully completed and OWNER and ENGINEER agree that the Operation Availability Demonstration can begin.

C. Following demonstration of all system functions, CONTACTOR shall provide onsite support and coordination to support OWNER testing of the remote HMI interface. CONTACTOR will provide opportunity to test all intended monitoring and control functions are fully implemented and operational from the remote HMI.

1.04 OPERATIONAL AVAILABILITY DEMONSTRATION

A. Operational Availability Demonstration (OAD) shall begin following completion of the integrated system field test as specified above and shall continue until a time frame has been achieved wherein the system (both hardware and software) availability meets or exceeds 99.7 percent for 60 consecutive days and no system failures have occurred which result in starting the OAD over again. During the OAD the system shall be available to plant operating personnel for use in normal operation of the plant.

B. For the purpose of the OAD, the system will be defined as consisting of the following systems and components:

1. All sensors and instruments, including wiring and appurtenances.
2. PLC panel components, including PLC, network switch, UPS, appurtenances, and related programming and configuration.
3. All control network switches.
4. Communications network cable and wiring.
5. HMI software programming and configuration.

C. The conditions listed below shall constitute system failures which are considered critical to the operability and maintainability of the system. Terminate the OAD if one or more of these conditions occur. Following correction of the problem, a new 60 consecutive day OAD shall begin.

1. Failure to repair a hardware or software problem within 120 consecutive hours from the time of notification of a system failure.
2. Recurrent hardware or software problems: if the same type of problem occurs three times or more.
3. Software problem causing a processor to halt execution.

D. The following conditions shall constitute a system failure in determining the system availability based on the equation specified in Paragraph 1.04.E., below:

1. Failure of:
   a. UPS.
2. Loss of communications between devices on the communications network.
3. Failure of one or more input/output components.
4. Failures of any type affecting ten or more input/output points simultaneously.
5. Failure of any type affecting one or more regulatory control loops or sequential control strategies thereby causing a loss of the automatic control of the process variable or process sequence operation.

6. Failure of power supply. Where redundant power supplies are provided, failure of one power supply shall not constitute a system failure provided the backup power supply operates properly and maintains supply power. Failure of the backup supply to operate properly and maintain supply power shall constitute a system failure.

7. Failure of three or more primary sensors/transducers or field instruments simultaneously.

E. The system availability shall be calculated based on the following equation:

$$A = \frac{TTO}{TO + TTR} X \quad 100 \text{ Percent}$$

where, A = system availability in percent

TTO = total time in operation
TTR = total time to repair

F. Time to repair shall be the period between the time that CONTRACTOR is notified of a system failure and the time that the system has been restored to proper operation in terms of hours with an allowance for the following dead times which shall not be counted as part of the time to repair period.

1. Actual travel time for service personnel to get to the Site up to six hours per incident from the time CONTRACTOR is notified of a system failure.

2. Time for receipt of spare parts to the plant site once requested up to 24 hours per incident. No work shall be done on the system while waiting for delivery of spare parts.

3. Dead time shall not be counted as part of the system available period. The dead time shall be logged and the duration of the OAD extended for an amount of time equal to the total dead time.

G. Completion of a 60 consecutive day period without any restarts of the OAD and with a system availability in excess of 99.7 percent will constitute acceptance of the PCS by OWNER.

H. All parts and maintenance materials required to repair the system prior to completion of the OAD shall be supplied by CONTRACTOR at no additional cost to OWNER. If parts are obtained from the required plant spare parts inventory, they shall be replaced to provide a full complement of parts as specified.

I. A Plant Control System Malfunction/Repair Reporting Form shall be completed by the plant personnel and ENGINEER to document system failures, to record CONTRACTOR notification, arrival and repair times and CONTRACTOR repair actions. Format of the form shall be developed by CONTRACTOR and agreed upon prior to the start of the OAD.

END OF SECTION

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SECTION 17404

PROCESS CONTROL SYSTEM TRAINING

PART 1 - GENERAL

1.01 REQUIREMENTS AND RESPONSIBILITIES

A. CONTRACTOR shall provide all labor, materials, equipment and incidentals as shown, specified and required to perform and coordinate all required training at times acceptable to OWNER and ENGINEER.

B. CONTRACTOR shall retain the services of the PCS Supplier and Programmer to provide operation and maintenance training for all Process Control System (PCS) equipment as specified herein.

C. For equipment items not manufactured by the Supplier, the Supplier shall provide for on-site training by an authorized representative of the equipment manufacturer as part of the Supplier's services. The manufacturer's representative shall be fully knowledgeable in the operation and maintenance of the equipment.

D. All training shall be conducted in the normal eight-hour working days until conclusion of the training course.

1.02 REFERENCED SECTIONS

A. Section 01330, Submittals

B. Section 01820, Training

C. Section 17491, Process Control Descriptions

1.03 SUBMITTALS

A. Comply with Section 01330.

B. Within 20 days of the effective date of the Notice to Proceed, CONTRACTOR shall submit plan for training, conforming to the requirements of Section 01820. Include course outlines and schedules for training to be provided.

1.04 ON-SITE TRAINING

A. Training covering the control equipment:

1. The CONTRACTOR shall provide 8 hours of training covering all system components.

2. Training course shall accomplish the following:

a. Provide instructions necessary to operate and utilize all system components, including HMI, network, and UPS equipment.

b. Provide instruction necessary to monitor and control the system processes from the designated control panel and OIT software.

c. Explain procedures for control of the system during scheduled or rescheduled shutdown and the subsequent start-up.

d. Provide instructions for regular caretaking operations.

e. PLC training as follows:

1) Provide an overview of system hardware and software.

2) The emphasis shall be placed on how to perform set point changes, minor programming changes, range changes, diagnostics and upkeep of documentation.

3) Instruction for hardware and software maintenance, trouble shooting and maintenance planning.

f. HMI training as follows:

1) Provide an overview of the overall display structure, logging in, and navigation. Review menu display contents to demonstrate how an operations person will navigate within the overall display structure.

2) Provide instruction for accessing all system information, including popups, setpoints, alarms, trends, and reports for all new work.

3) Review each graphic display layout, symbols, color scheme, and other graphical standards.

4) Provide instruction for startup/shutdown of equipment and accessing and/or performing all functions identified in Section 17491, Process Control Descriptions.

5) Provide instruction for setpoint changes and verifying response.

6) Demonstrate operation of standard alarm management displays (current alarm display, alarm history, and similar alarm displays).

7) Review historical data functionality including flow totals, motor runtime and starts.

8) Instruction for software maintenance, trouble shooting and maintenance planning.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 17430

PROCESS CONTROL SYSTEM EQUIPMENT PANELS AND ENCLOSURES

PART 1 - GENERAL

1.01 SCOPE

A. Provide all labor, materials, equipment, and incidentals as shown, specified and required to furnish, install, calibrate, test, start-up and place into satisfactory operation all process control panels and enclosures.

1.02 REFERENCED SECTIONS

A. Section 17401, Process Control System General Provisions

B. Section 17402, Process Control System Factory Testing

C. Section 17403, Process Control System Startup and Field Testing

D. Section 17491, Process Control Descriptions

1.03 QUALITY ASSURANCE

A. Standards, Codes and Regulations:

1. Construction of panels and the installation and interconnection of all equipment and devices mounted within shall comply with applicable provisions of the following standards, codes and regulations:

2. National Fire Protection Association 79, Annex “D” Standards, (NFPA).

3. National Electrical Code, (NEC).

4. National Electrical Manufacturer's Association Standards, (NEMA).

5. American Society for Testing and Materials, (ASTM).

6. Operational Safety and Health Administration Regulations, (OSHA).

7. Underwriters’ Laboratory, Inc., (UL).

8. State and Local code requirements.

9. Where any conflict arises between codes or standards, the more stringent requirement shall apply.

10. All materials and equipment shall be new and all panels shall be built in an Underwriters’ Laboratory, Inc. (UL) approved panel shop and bear the UL label.

B. General Design Requirements:

1. Comply with the requirements of Section 17401.

2. Comply with the control descriptions of Section 17491.

C. Factory Assembly and Testing:

1. Comply with the requirements of Section 17402.

1.04 SUBMITTALS

A. Comply with the requirements of Section 17401.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Comply with the requirements of Section 17401.

PART 2 - PRODUCTS

2.01 GENERAL CONSTRUCTION REQUIREMENTS

A. Provide all electrical components and devices, support hardware, fasteners, interconnecting wiring and/or piping required to make the control panels and/or enclosures complete and operational.

B. Locate and install all devices and components so that connections can be easily made and that there is ample room for servicing each item.

C. Components for installation on panel exterior shall be located generally as indicated on Sheet 75-I-001. Layouts shall be submitted for review in accordance with Section 17401.

D. PLC75001 enclosure

1. Existing enclosure is a Hoffman A-723630FS.
2. Replace existing full height, front access door.
3. Replace existing sub-panel for installation of all relays and other internally mounted components.
4. Temporarily label and disconnect existing field signal wires from existing terminal strips. Reconnect existing field signal wires to new terminal strips.
5. All wiring to panel connections from field instruments, devices, and other panels shall be terminated at master numbered terminal strips, unless otherwise specified.
6. Provide copper grounding studs for all panel equipment.
7. Provide the following convenience accessories inside of each control panel:
    a. One 120 VAC, 20A duplex, grounding type receptacle.
    b. One 120 VAC, 15A simplex receptacle for UPS.
    c. One internal 120 VAC LED light fixtures with 5-watt lamp.
    d. Internal service panel lighting shall automatically activate when panel door is open and turn off when closed.
    e. Service light and duplex receptacle shall each have their own circuit breakers.
8. The bottom 12-inches of the cabinet shall be free of all devices, including terminal strips, to provide ease of installation and testing.

2.02 IDENTIFICATION

A. Provide laminated plastic nameplates for identification of panels and components mounted thereon as follows:

1. Nameplates shall be of 3/32-inch thick laminated phenolic type with black matte finish surface and white letter engraving.
2. Panel identification nameplates to have 1/2-inch high letter engravings.
3. Panel mounted component (e.g., control devices, indicating lights, selector switches, etc.) identification nameplates to have 1/4-inch high letter engravings.
4. Nameplates shall be attached to the panel face with two stainless steel self-tapping screws.
5. Nameplate engravings shall be as indicated on Sheet 75-I-001.

B. Tagging of the following items shall be accomplished with the use of adhesive plastic Brady USA, Inc. labels, or equal.

1. Tag all electrical devices (e.g., relays, timers, power supplies) mounted within control panels and enclosures.

2. Numerically tag all terminal blocks.

3. Color code and numerically tag wiring at each end.

2.03 PANELS AND ENCLOSURES

A. General:

1. Panels and enclosures shall meet the UL Type requirements as indicated on the Drawings.

B. Electrical Systems:

1. Control of Environment:

a. Indoor Panels:

1) Provide automatically controlled fan(s) with filtered air louvers as required to maintain temperature inside each enclosure below the maximum operating temperature rating of the components inside the enclosure.

2. Power Source and Internal Power Distribution:

a. General: Control panel power supply source, type, voltage, number of circuits and circuit ratings shall be as shown.

b. Panels shall be provided with an internal 120 VAC power distribution as indicated on Sheet 75-I-002.

c. PLC panels shall be provided with an internal 24 VDC power distribution with number of circuits as indicated on Sheet 75-I-002.

2.04 ELECTRICAL COMPONENTS

A. Circuit Breakers:

1. Provide circuit breakers with the following features, 120 VAC, DIN rail mounted and UL listed.

2. Provide end caps, marking strips, insulated side jumpers and other accessories.

3. UL 489 breakers are required.

4. Product and Manufacturer, Provide one of the following

5. Allen-Bradley.

6. Eaton Corporation.

7. Phoenix Contact.

8. Substitutions: Approved equal.

B. Wiring:

1. Internal wiring shall be Type MTW and THW stranded copper wire with thermoplastic insulation rated for 600 V at 90ºC for single conductors, color coded and labeled with wire identification.

2. For DC panel analog wiring, use No. 18 minimum AWG shielded.

3. For DC power wiring, use No. 12 minimum AWG.

4. For DC signal and control wiring, use No. 16 minimum AWG. For wiring carrying more than 15 A, use sizes required by UL standards.

5. Separate low voltage signal wiring from power and control where possible.

6. Group or bundle parallel runs of wire using covered troughs/wireways. Wireways shall be as indicated on Sheet 75-I-001.

7. Adequately support and restrain all wiring runs to prevent sagging or other movement.

8. Terminate all field wiring using crimp-on, non-insulated ferrules (soldered type not acceptable) at 600 V rated barrier type terminal strips with screwed connections and permanently affixed numeric identifiers beside each connection. Identifiers to be heat-shrink type with machine printed numbers. For DC field signal wiring, terminal strips shall be capable of handling No. 12 wiring (minimum). Provide Phoenix Contact or Allen Bradley.

9. All wiring shall be installed such that if wires are removed from any one device, power will not be disrupted to any other device.

10. All alarms generated external to the panel, spare alarm, and repeat contacts shall be wired out to terminal blocks.

11. Provide a separate terminal for grounding each shielded cable.

12. Use separate 5/16-inch diameter copper grounding studs for instrument signal cable shields and AC power.

13. When DC power and/or low voltage AC power is required, provide and install the necessary power supplies and transformers in the panel.

14. Provide complete wiring diagram showing "as-built" circuitry. Diagram shall be enclosed in transparent plastic and placed in easily accessible pocket built into panel door.

15. Discrete Input Signal Terminal Blocks: For each discrete input point, provide the following:

16. One (1) Phoenix Contact, Type UK 5-HESILED 24 N, fused terminal block, Model # 3000540.

17. One (1) Phoenix Contact, Type UTTB-4, 2-tier terminal block, Model # 3044814.

18. Discrete Out Signal Terminal Blocks: For each discrete output point, provide the following:

19. One (1) Allen Bradley, Type 700 HL, terminal block relay, Model # 700-HLT12Z24

20. One (1) Phoenix Contact, Type UTTB-4, 2-tier terminal block, Model # 3044814.

21. For each analog input channel, provide the following:

22. One (1) Phoenix Contact, Type UK 5-HESILED 24 N, fused terminal block, Model # 3000540.

23. One Weidmuller SD32 surge protector.

24. One (1) Phoenix Contact, Type UT 4, feed through type terminal block, Model # 3044102.

25. One (1) Phoenix Contact, Type UT 4-PE, grounding type terminal block, Model # 3044128.

26. Wiring Color Convention:

a. The following color code shall be used inside panels. Refer to Division 16 for outside of panel conventions.

WIRE COLOR CODE TABLE (Inside Panels)		
TYPE	FUNCTION	INSULATION COLOR
AC POWER - HOT	120VAC	*BLACK
AC POWER -NEUTRAL	120VAC	WHITE
AC GROUND	120VAC	GREEN
AC CONTROL	120VAC	*RED
ISOLATED DC GROUND	GROUND	GREEN W/ YELLOW
DC POWER	SOURCE	BLUE
DC POWER	COMMON	WHITE / BLUE
CONTROL	FOREIGN VOLTAGES	ORANGE
LOW VOLTAGE AC	24 VAC SOURCE	BROWN
LOW VOLTAGE AC	24 VAC COMMON	BROWN W/WHITE
TEMPORARY	TEMPORARY	PURPLE

* - Black 120 VAC wires are hot unless powered down via supplementary circuit protector. Red 120 VAC wires are hot based on the control logic state.

C. Ethernet switch (not indicated on Drawings, but still required)

1. Stratix 5400, 4 PoE 10/100/1000 ports, 8 combo (copper or SFP slot) 10/100/1000 ports, Layer 2 FW. Model 1783HMS4EG8CGN, no equal.

D. 24V POWER SUPPLY

1. General: Single unit and multiple unit power supplies, located in control room panels, remote terminal units and field panels as required.

2. Single Unit Required Features:

a. Solid state circuitry.
b. Din-rail mounted.
c. Input Power: 120 VAC ±10 percent, 60 Hz.
d. Output Power: 24 VDC or as required.
e. Output Current: 10 A
f. Line/Load Regulation: ±0.005 percent.
g. Ripple: 0.25 mV RMS.
h. Polarity: Floating output.
i. Ambient Temperature: -20°C to +71°C.
j. Response Time: <20µS.
k. Overload Protection: Internal preset.
l. Include mounting brackets, fuse, and mating connector for AC power plug.
m. Provide with Sola SDN2X10RED (OWNER PREFERENCE) redundancy module.

3. Products and Manufacturers: (See Bill of Material for recommended model number) Provide one of the following:

   a. Sola, SDN 10-24-100P

   b. Phoenix Contact

   c. Substitutions: Approved equal.

E. Uninterruptible Power System

1. Uninterruptible Power System (UPS) shall be furnished to provide a reliable source of uninterruptible power with no break in AC output power during a complete or partial interruption of incoming line power. UPS shall include audio/visual alarms. UPS shall be UL listed.

2. Rating: 120 VAC, 60 Hz, 1.4KVA/1.0KW minimum to provide uninterrupted conditioned power, fully loaded conditions for 15 minutes.

3. Description: Online dual track power conditioner and true (0 ms transfer time) uninterruptible power supply providing isolation, line regulation and conditioning, using sealed 48 VDC maintenance free batteries and switch mode power supply for uninterrupted power with 0.5 to 0.7 power factor and 2.7 to 3.5 crest factor.

4. Required Features:

   a. Lighting and Surge Protection: Inherent 2000: One spike attenuation.

   b. Regulation: One to three percent load regulation with less than 2pF effective coupling capacitance for line to load.

   c. Output Waveform: Computer grade sine wave with three percent maximum single harmonic and five percent maximum total harmonic distortion.

   d. Output Frequency: 60 Hz ±0.5 Hz.

   e. Operating Temperature: 1°C to 40°C.

   f. Relative Humidity: Five to 90 percent non-condensing.

   g. Computer Interface:

   h. Dry Contact I/O SmartSlot Card, APC – AP9613, or equal

   i. 4 configurable input contacts

   j. 6 configurable output relays

   k. Configuration utility

   l. Input Protection: Independent battery charger fuse and DC fuses.

   m. Output Protection: Inherently current limited ferro-resonant transformer.

   n. Battery Charger: Two-step charger, 8 A and 2 A.

   o. AC Input: 120 VAC, 60Hz, single phase, +15 percent, -20 percent.

   p. AC Output: 120 VAC, 60Hz, single phase, +3 percent, -3 percent.

5. Products and Manufacturers: Provide one of the following:

   a. APC SMT1500C

   b. Substitutions: Approved equal.

F. AC SURGE SUPPRESSOR

1. Din Rail Mounted

2. Service Voltage: 120 Vac

3. Visual Suppression Status Indicator

4. Frequency:
    a. Minimum: 50 Hz
    b. Maximum 400 Hz
5. Maximum Continuous Operating Voltage
    a. Typical: 125 A gL/gG
    b. Maximum: 150 Vac
6. Surge Protection Technology
    a. MOV
    b. GDT
7. Protection Modes
    a. L-N,
    b. N-PE
8. 8/20 µs Surge Current: 40 kA
9. Nominal Discharge Current Rating (In): 20 kA
10. VPR 8/20 µs
    a. L-N: 1,000 Vpk
    b. N-G: 1,500 Vpk
11. Response Time: 25 ns
12. Short Circuit Current Rating: 25 kAIC
13. Compliance Certifications
    a. ROHS Compliant
    b. CE Compliant
    c. Certifications: IEC 61643-11 CLASS II
14. Products and Manufacturers: Provide one of the following:
    a. Transtector.
    b. Substitutions: Approved equal.

G. DC SURGE PROTECTOR

1. Service Voltages : 24 Vdc
2. Current Rating: 10 A
3. Maximum Continuous Operating Voltage : 32 Vdc
4. Surge Protection Technology: SASD
5. Surge Protection Modes: Supply to GND
6. Response Time: 5 ns
7. VPL 8/20 µs L-G: 60 @ 1200A Vpk
8. VPL 10/1000 µs: 50 @ 134A Vpk
9. Products and Manufacturers: Provide of one of the following:
    a. Transtector.
    b. Substitutions: Approved equal.

H. RECEPTACLE

1. Din rail mounted
2. Dual power outlet
3. Ground Fault Circuit Interruption
4. Nominal Current IN: 15 A
5. Nominal Voltage UN: 125 V AC
6. Products and Manufacturers: Provide one of the following:
    a. Phoenix Contact.
    b. Substitutions: Approved equal.

I. DIN RAIL

1. Sizing: NS 35/ 7,5
2. Products and Manufacturers: Provide of one of the following:
    a. Phoenix Contact.
    b. Substitutions: Approved equal.

J. DUAL ADJUSTABLE THERMOSTAT

1. General: DIN-rail mounted thermostat installed in a field control panel for alarming once ambient temperature inside control panel exceeds the locally configured temperature setpoint.
2. Required Features:
    a. Sensor Element: Thermostatic bimetal.
    b. Contact Type: Snap-action contact (minimum one N.O. contact).
    c. Contact Resistance: <10 mΩ.
    d. Service Life: >100,000 cycles.
    e. Max. Switching Capacity: 5A resistive/2A inductive @ 250VAC.
    f. Max. Inrush Current: AC 16A for 10 seconds.
    g. Minimum Load: 20mA (all voltages).
    h. Housing: Plastic, UL 94V-0.
    i. Mounting: Clip for 35mm DIN RAIL, vertically mounted.
    j. Operating/Storage Temperature: -49 to 176°F (-45 to 80°C).
    k. Weight: 0.2lb (90g).
    l. Approvals: CE, CSA, VDE, EAC, UL
3. Products and Manufacturers: Provide one of the following:
    a. Stego.
    b. Hoffman.
    c. Substitutions: Approved equal.

K. WIRE DUCT

1. Lead-Free PVC slog wiring duct
2. Size: CONTRACTOR to refer to elevation drawing sheets.
3. Products and Manufacturers: Provide one of the following:
    a. Panduit.

b. Substitutions: Approved equal.

L. WIRE DUCT COVER

1. Lead-Free PVC slog wiring duct
2. Size: CONTRATCOTR shall ensure size compatibility to WIRE DUCT.
3. Products and Manufacturers: Provide one of the following:
   a. Panduit.
   b. Substitutions: Approved equal.

M. REMOVABLE WIRE COVER

1. Not indicated on the drawings. Used to support the uninterruptible power supply.
2. Wireway – removable
3. Size: Height: 6.00”, Width: 35.00”, Depth: 14.00”
4. Products and Manufacturers: Provide one of the following:
   a. Saginaw, SCE-14RMW.
   b. Substitutions: Approved equal.

2.05 SPARE PARTS AND TEST EQUIPMENT

A. CONTRACTOR shall furnish and deliver the spare parts and test equipment as outlined below, all of which shall be identical and interchangeable with similar parts furnished under this Section.

B. The spare parts shall be packed in containers suitable for long term storage, bearing labels clearly designating the contents and the pieces of equipment for which they are intended.

C. The following shall constitute the minimum spare parts:

1. Five of each type of output relay.
2. One replacement power supply for each type and size furnished for this Contract.
3. Ten of each type and size of fuse used in panels and instruments.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install equipment in conformance with NEC.

B. Install and interconnect all equipment, devices, electrical hardware, instrumentation and controls and process controller components into and out of and among the enclosures as indicated on the Drawings.

3.02 TESTING AND ADJUSTMENTS

A. Perform system testing and make any adjustments necessary in accordance with this Section, Section 17401, Section 17402, and Section 17403.

B. Perform power supply, voltage adjustments to tolerances required by the appurtenant equipment.

END OF SECTION

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SECTION 17451

PROGRAMMABLE LOGIC CONTROLLERS

PART 1 - GENERAL

1.01 SCOPE

A. Provide all labor, materials, equipment and incidentals as shown, specified and required to furnish and install a fully functional Programmable Logic Controller (PLC) system.

1.02 REFERENCED SECTION

A. Section 17401, Process Control System General Provisions

B. Section 17491, Process Control Descriptions.

1.03 TERMS

A. The terms listed below are used throughout this Section and are defined as such:

1. Programmable Logic Controller (PLC): The controlling device used to control and monitor hardware connected to it by way of networks or I/O cards.

2. Backplane: Usually will indicate the chassis that the PLC and I/O cards reside in.

3. I/O Cards: Can be either analog or discrete cards that interface between field devices and PLC.

4. PLC System: Includes all parts listed above as well as power supplies, communication and ancillary components present in a PLC control panel.

5. Human Machine Interface (HMI): Operator Interface to control system. Allows operator intervention and monitoring of all systems and subsystems connected to the PLC system, usually a desktop computer or industrial hardened computer. Typically, this is software that provides monitoring and control across the entire Plant.

6. Operator Interface Terminal (OIT): Operator Interface to control system. Allows operator intervention and monitoring of all systems and subsystems connected to the PLC system. This typically refers to a local panel-mounted touchscreen that is specific to the process area it is in and does not provide Plantwide information.

1.04 QUALITY ASSURANCE

A. Engage the services of a PLC manufacturer to provide all equipment listed in the Contract Documents. The System manufacturer shall demonstrate a minimum of ten years experience providing PLC systems and be able to show evidence of at least five installations of equal or greater size to the one being specified.

1.05 MAINTENANCE

A. The PLC vendor shall provide recommended preventive maintenance tasks, schedules and instructions for hardware supplied. The PM documentation must be clear, applicable to hardware provided, concise and accurate.

1.06 TROUBLESHOOTING

A. The PLC vendor shall provide trouble-shooting procedures for hardware supplied. The procedures shall be accurate, easy to understand and follow, current, and comprehensive

in scope. If links to vendor website or technical support is necessary, the vendor shall provide up-to-date phone numbers and links.

PART 2 - PRODUCTS

2.01 GENERAL

A. The PLC configuration indicated is diagrammatic. The PLC system shall include as a minimum power supply, network connections, I/O cards, and CPU as shown and as required to achieve the specified functionality.

B. The final system configuration shall utilize the System Manufacturer's standard hardware and software to meet the functional requirements of these Specifications.

C. All equipment furnished under this Contract shall be provided to meet the functional requirements of these Specifications.

D. The PLC system shall be capable of being integrated into a larger plant wide network using Ethernet/IP protocol.

2.02 PLC SYSTEM FEATURES AND CAPABILITIES:

A. PLC modules:

1. Chassis: 1756-A10, no equal.
2. Empty Slot Filler: 1756-N2, no equal.
3. Power Supply: 1756-PA75.
4. Discrete Input Module: 16 inputs, 12/24V DC sink/source, 1756-IB16I, no equal.
5. Discrete Output Module: 16 electronically fused outputs, 12/24V DC source, 1756-OB16E, no equal.
6. Analog Input Module: 8 differential voltage or current inputs, HART interface, 1756-IF8H, no equal.
7. Ethernet Communication Module: 1756-EN4TR, no equal.
8. Processor Module: 1756-L82E, no equal.
9. Input/Output Modules:
    a. The system shall be configured to support the quantity of input/output signals required from the input/output list plus an additional 20 percent spare input and output signals. This includes 20 percent spare of each type of input and output module. The additional 20 percent shall be distributed between the different I/O cards and shall be installed in the rack and wired. The additional 20 percent spare I/O is in addition to the spare parts to be furnished in accordance to the specifications.
    b. The I/O structure shall be field expandable to the maximum spare requirements without modification to the control processor.

2.03 PLC PROGRAMMING SOFTWARE (NOT APPLICABLE)

2.04 SPARE PARTS AND TEST EQUIPMENT

A. CONTRACTOR shall furnish and deliver the spare parts and test equipment as outlined below, all of which shall be identical and interchangeable with similar parts furnished under this Section.

B. The spare parts shall be packed in containers suitable for long term storage, bearing labels clearly designating the contents and the pieces of equipment for which they are intended.

C. The following shall constitute the minimum spare parts:

1. One PLC chassis.
2. One PLC power supply.
3. One PLC CPU.
4. One network module for each type furnished.
5. One of each I/O module furnished.

PART 3 - EXECUTION

3.01 ENVIRONMENTAL CONDITIONS

A. The complete monitoring and control system and associated input/output wiring will be used in a water treatment facility environment where there will be high energy AC fields, DC control pulses, and varying ground potentials between the transducers or input contact locations and the system components. The system design shall be adequate to provide proper protection against interferences from all such possible situations.

B. The PLC and panel components shall be designed and constructed for satisfactory operation and long, low maintenance service under the following environmental conditions:

1. Temperature range: 32 to 122°F continuous.
2. Relative humidity: 5 through 95 percent (non-condensing).

3.02 INSTALLATION

A. All spare I/O points shall be wired to terminal blocks.

END OF SECTION

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SECTION 17480

PROCESS CONTROL SYSTEM INPUT/OUTPUT LIST

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. System input/output (I/O) list background and requirements for configuring the control system database.

B. The list can be found in the Contract Drawings.

C. The I/O list information is available from the ENGINEER. Allow 15 days from request for file delivery.

1.02 REFERENCED SECTIONS

A. Section 17451, Programmable Logic Controllers.

B. Section 17491, Process Control Descriptions.

1.03 SUBMITTALS

A. For each I/O attribute listed in the I/O list that cannot be used exactly as listed, submit an explanation of the reason for the deviation and propose a method to modify the I/O list information. Do not proceed with any configuration until a method of resolving deviations is accepted by the ENGINEER.

B. Include the control system I/O database information in the PLC-specific submittals for Section 17451.

1.04 I/O LIST DESCRIPTION

A. The I/O list contains the information necessary to configure the PLC I/O interface hardware and to indicate range conversion or signal functions.

B. “POINT” is an alphanumeric character string for simple point identification. Refer to the Contract Drawings for more information.

C. “PANEL” identifies the PLC panel associated with the I/O point.

D. “SLOT” identifies the slot number on the PLC rack associated with the I/O point.

E. “CHANNEL” identifies the channel number on the slot associated with the I/O point.

F. “SIGNAL TYPE” is one of the following:

1. AI designates an analog input.
2. AO designates an analog output.
3. DI designates a discrete input.
4. DO designates a momentary, maintained or latched discrete output.
5. N/A designates signal type does not apply.

G. “MODULE” identifies the module model number for the module in the slot. Confirm against PLC panel bill of materials in Contract Drawings.

H. “DESCRIPTION” text identifying the function of the I/O point. Points described as “SPARE” denote pre-wired I/O.

I. "DATA FIELD" identify additional information on the I/O points based on the signal type:

1. Analog Input:

   a. "DATA FIELD 1" is the electrical input signal range and units.

   b. "DATA FIELD 2" is the process parameter range and engineering unit.

2. Discrete Input:

   a. "DATA FIELD 1" is the condition that exists when a field contact is closed.

   b. "DATA FIELD 2" is the condition that exists when a field contact is open.

3. Analog Output:

   a. "DATA FIELD 1" is the electrical output signal and units.

   b. "DATA FIELD 2" is the range of the controlled variable and engineering units.

4. Discrete Output:

   a. Discrete outputs can be momentary or maintained and shall be confirmed with equipment manufacturer.

   b. "DATA FIELD 1" is the contact closed function.

   c. "DATA FIELD 2" is the contact open function.

J. "ALARM" is used only for discrete inputs to distinguish between status inputs and alarm inputs. Refer to Section 17491, for more information on alarm configuration.

K. "COMMENT" is used for additional information pertinent to the I/O point.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 I/O CONFIGURATION

A. Implement the control system database fields in a consistent manner by using the following procedures:

1. Use abbreviations and acronyms already established in the Contract Documents. Use the information in the I/O List.

2. Use only abbreviation or acronym for a word or group of words, respectively.

3. Use the same subject and word order within data fields.

4. Use the same term (either phrase, word or acronym) to denote the same meaning. Do not use multiple terms for a single meaning.

5. Use the point names, descriptions, logic state descriptions, ranges and units of measurement exactly the same wherever the point is referenced.

6. Show point names and descriptions for all point references on documentation.

7. Spell correctly.

8. Maintain lists of acronyms and abbreviations used.

3.02 I/O HARDWARE CONFIGURATION

A. Partition the I/O among cards within an I/O enclosure to provide control loop integrity.

B. Confirm with OWNER response of equipment on communication loss with networked equipment, remote systems, PLC switching to program mode and processor faults.

3.03 POINT DATA FIELDS

A. I/O point data fields may be subject to review and modification by the ENGINEER during the Shop Drawing review phase. Incorporate changes directed by the ENGINEER completely into the entire system, at no additional cost to OWNER.

END OF SECTION

Area Identifier	Tag Number	Panel	Rack	Slot	Point	Module / I/O	Service Description	Comments
		PLC75001	0	0		1756-L82E	PROCESSOR	
		PLC75001	0	1		1756-EN4TR	ETHERNET COMMUNICATION MODULE	
		PLC75001	0	2	0	Digital Input	SLUDGE RECIRC PUMP #1 RUNNING	
		PLC75001	0	2	1	Digital Input	SLUDGE HEATING H20 PUMP 3 RUNNING	
		PLC75001	0	2	2	Digital Input	BOILER RECIRC PUMP #1 RUNNING INPUT	
		PLC75001	0	2	3	Digital Input	SLUDGE MANHOLE HI LEVEL ALARM INPUT	
		PLC75001	0	2	4	Digital Input	SLUDGE MANHOLE LOW LEVEL ALARM INPUT	
		PLC75001	0	2	5	Digital Input	THICKENED SLUDGE PUMP ALARM INPUT	
		PLC75001	0	2	6	Digital Input	THICKENED SLUDGE PUMP HI PRESSURE ALARM	
		PLC75001	0	2	7	Digital Input	THICKENED SLUDGE PUMP RUNNING INPUT	
		PLC75001	0	2	8	Digital Input	THICKENED SLUDGE SUMP LO-LO LEVEL ALARM	
		PLC75001	0	2	9	Digital Input		
		PLC75001	0	2	10	Digital Input		
		PLC75001	0	2	11	Digital Input		
		PLC75001	0	2	12	Digital Input		
		PLC75001	0	2	13	Digital Input		
		PLC75001	0	2	14	Digital Input		
		PLC75001	0	2	15	Digital Input		
		PLC75001	0	3	0	Digital Input	SLUDGE RECIRC PUMP #2 RUNNING	
		PLC75001	0	3	1	Digital Input	SLUDGE HEATING H2O PUMP 4 RUNNING	
		PLC75001	0	3	2	Digital Input	BOILER RECIRC PUMP #2 RUNNING INPUT	
		PLC75001	0	3	3	Digital Input	FEED MANHOLE MODE SELECTED	
		PLC75001	0	3	4	Digital Input	PRIMARY SLUDGE PUMP SELECTED	
		PLC75001	0	3	5	Digital Input	WASTEWASH WATER SLUDGE PUMP SELECTED	
		PLC75001	0	3	6	Digital Input	AIR COMPRESSOR RUNNING INPUT	
		PLC75001	0	3	7	Digital Input	HOT WATER PUMP HWCP-5 RUNNING INPUT	
		PLC75001	0	3	8	Digital Input	RECLAIMED SLUDGE WATER BOOSTER PUMP RUNNING	
		PLC75001	0	3	9	Digital Input	STOP SW SLUDGE PUMP IN MANHOLD	
		PLC75001	0	3	10	Digital Input	<Spare Digital Input Point>	
		PLC75001	0	3	11	Digital Input	<Spare Digital Input Point>	
		PLC75001	0	3	12	Digital Input	<Spare Digital Input Point>	
		PLC75001	0	3	13	Digital Input	<Spare Digital Input Point>	
		PLC75001	0	3	14	Digital Input	<Spare Digital Input Point>	
		PLC75001	0	3	15	Digital Input	<Spare Digital Input Point>	
		PLC75001	0	4		1756-N2		
N/A		PLC75001	0	5	0	Digital Output	THICKENED SLUDGE PUMP START OUTPUT	
N/A		PLC75001	0	5	1	Digital Output	THICKENED SLUDGE SUMP HI LEVEL OUTPUT	
N/A		PLC75001	0	5	2	Digital Output	PLC RUNNING OUTPUT	
		PLC75001	0	5	3	Digital Output	<Spare Digital Output Point>	
		PLC75001	0	5	4	Digital Output	<Spare Digital Output Point>	
		PLC75001	0	5	5	Digital Output	<Spare Digital Output Point>	
		PLC75001	0	5	6	Digital Output	<Spare Digital Output Point>	
		PLC75001	0	5	7	Digital Output	<Spare Digital Output Point>	
		PLC75001	0	5	8	Digital Output	<Spare Digital Output Point>	
		PLC75001	0	5	9	Digital Output	<Spare Digital Output Point>	
		PLC75001	0	5	10	Digital Output	<Spare Digital Output Point>	

Area Identifier	Tag Number	Panel	Rack	Slot	Point	Module / I/O	Service Description	Comments
		PLC75001	0	5	11	Digital Output	<Spare Digital Output Point>	
		PLC75001	0	5	12	Digital Output	<Spare Digital Output Point>	
		PLC75001	0	5	13	Digital Output	<Spare Digital Output Point>	
		PLC75001	0	5	14	Digital Output	<Spare Digital Output Point>	
		PLC75001	0	5	15	Digital Output	<Spare Digital Output Point>	
		PLC75001	0	6		1756-N2		
N/A		PLC75001	0	7	0	Analog Input	SLUDGE MANHOLE LEVEL	
N/A		PLC75001	0	7	1	Analog Input	THICKENED SLUDGE SUMP LEVEL	
		PLC75001	0	7	2	Analog Input	<Spare Analog Input Point>	
		PLC75001	0	7	3	Analog Input	<Spare Analog Input Point>	
		PLC75001	0	7	4	Analog Input	<Spare Analog Input Point>	
		PLC75001	0	7	5	Analog Input	<Spare Analog Input Point>	
		PLC75001	0	7	6	Analog Input	<Spare Analog Input Point>	
		PLC75001	0	7	7	Analog Input	<Spare Analog Input Point>	
		PLC75001	0	8		1756-N2		
		PLC75001	0	9		1756-N2		

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SECTION 17491

PROCESS CONTROL DESCRIPTIONS

PART 1 - GENERAL

A. CONTRACTOR shall furnish control strategy diagrams, configuration sheets and control strategy descriptions as shown, specified and required to configure the system complete and operational.

B. CONTRACTOR shall be responsible for furnishing, installing, programming, configuring, and tuning of any and all new PLCs and hardware for implementation of the control descriptions described in this section, the functions shown on the drawings and those listed in the PLC I/O list.

C. Contractor shall retain the services of the OWNER's preferred integrator:

1. JM Integration LLC
   Jack Miller
   888-536-8623

2. Integrator services include:

   a. Provide all programming of PLCs, related PLC components, and network equipment within the modified control panels (MCP). This programming will implement the control descriptions in this section.

   b. Provide, install, and test updated HMI screens for the plant SCADA system. This includes status and control of VENDOR equipment and removal of interfaces related to equipment demolished or decommissioned by this project.

   c. Attend and support the testing described in Section 17402 Process Control System Factory Testing.

   d. Coordinate with the VENDOR to support integration of VENDOR systems.

D. The requirements set forth in this section supplement the requirements indicated elsewhere in the Contract Documents. In case of conflict, the Contractor shall submit a Request for Information to the Engineer to resolve the Conflict. The P&IDs, Control Strategy, and Specifications shall be considered equal; none shall have precedence over any other.

E. This Specification provides process control descriptions for the major, automatically controlled processes. The intent of these descriptions is to aid the Contractor's understanding of the intended control of these systems. It is not the intent of these descriptions to replace the system's control as indicated on the Drawings or specified elsewhere herein.

F. These descriptions, together with instrument specifications, equipment specifications, and the Drawings, including the Process and Instrumentation Diagrams (P&IDs), comprise the functional design criteria of the instrumentation and control system.

G. Utilize these descriptions and the P&IDs as the basic criteria for the design of the instrumentation and control schematics, preparation of the instrument data sheets and wiring diagrams, assembly drawings, and other requirements set forth in these Specifications.

H. CONTRACTOR is responsible for complying with existing OWNER programming standards (e.g. fill colors, text size and color, navigation, tag conventions, access control).

1.02 GENERAL

A. This Section describes the anticipated control programming under this Contract.

B. Process Control Functions:

a. Process control function shall be structured to permit the realization of all control strategy requirements. In addition, each control function shall be designed so that bumpless, balance free transfers are obtained during operating mode changeover and initialization. Where applicable, user-changeable parameters shall be automatically defaulted to a preset value if a specific value is not given during system generation.

b. The P&IDs represent the required process monitoring and control. The required control for the system is a combination of the representation on the P&IDs and the requirements specified herein. The P&IDs do not show all the required internal diagnostic indications. In addition to the indications shown on the P&IDs, at a minimum, the following shall be provided:

c. Indication of bad quality on any hard-wired input/output point (such as zero milliamps on a 4 to 20 mADC circuit).

d. Individual PLC fault indications.

e. Indication of a communications failure with an alarm generated at the operator display.

f. For all motor start and stop commands check for run feedback after adjustable time delay (0 to 120 seconds). Provide a “FAIL TO START” and “FAIL TO STOP” alarm if unit fails to start or stop. Use the failure start or stop bit to remove the run command from the control logic. The alarm should not be generated within the hardwired pump restart timer. These alarms should not apply while the BYPASS MODE is active.

g. For all VFD motors, provide a speed discrepancy alarm when the speed command setpoint is outside of an adjustable Deadband position setpoint (0 to 50 percent) from the speed feedback after an adjustable time delay (0 – 120 seconds). Use the failure bit to remove the run command from the control logic.

h. For all motors, provide an adjustable restart delay setpoint (0 to 120 seconds) to prevent the motor from being started from the HMI after being stopped. The motor should not be restarted until the delay time has elapsed to allow for motor winddown.

i. For analog control loops, when control of field equipment is not in “REMOTE,” the associated PID controller output shall track the position feedback.

j. Runtimes and start counts shall be provided for all pieces of equipment, including today, yesterday, this week, last week, this month, last month, and lifetime totals.

k. Flow totals shall be provided for all flow meters, including today, yesterday, this week, last week, this month, last month, and lifetime totals. Provide a total for each month of the previous 12 months.

l. All Alarms and Switches shall be time delayed. Delay settings shall be adjustable from the HMI.

m. All Alarms shall be enabled/disabled at the PLC level based on the operating status of systems and devices, such that nuisance alarms associated with offline equipment are prevented.

n. All alarms shall be capable of being enabled/disabled from the respective screen on the HMI. When disabled, the instrument or device shall have a

graphic symbol at the HMI indicating its alarms have been disabled. The system shall have a screen that indicates which alarms are disabled.

o. Shutdown alarms are to be manually reset for the operator to verify that the equipment can be restarted safely. A single acknowledgement will reset the alarms.

p. For Shutdown alarms, (HW) denotes that it is a hardwired interlock. (SW) denotes a software interlock.

q. All analog alarms shall be configured in the PLC with debounce and other applicable features. All alarms must comply with ISA 18.2. For all analog signals, provide the following alarm indications:

   a) "High-high."
   b) "High."
   c) "Low."
   d) "Low-low."
   e) "Instrument Failure." (i.e. outside of the 4 to 20 mADC range or AI module failure)

r. In addition to the indications shown on the P&IDs, the following shall be provided at a minimum:

s. Analog Data Scaling: This control function shall scale all analog inputs to a common span and shall normalize the digital representation of each analog input to a percent of the operating span. The processed value shall be expressed as a binary number that specifies the analog input's position on a straight line lying between zero and full scale.

t. Engineering Unit Conversion: This control function shall convert scaled analog data to engineering units by means of the following equation:

$$Y = (H - L)(D/DH) + L$$

where:

Y	=	Value in engineering units.
H	=	High value of span, expressed in engineering units.
L	=	Low value of span, expressed in engineering units.
D	=	Digitized scaled input value in counts.
DH	=	Full scale digitized value in counts.

u. Manual Control: It shall be possible for operator to interrupt any sequence, loop or automatic operation and operate the same equipment manually through the operator display.

v. Verification of Digital Outputs: This control function shall verify that the equipment has responded to the digital commands before proceeding to next step during automatic operation. If any discrepancy is detected, an alarm will be annunciated, and function stopped.

C. Hardware: CONTRACTOR shall provide all the hardware and software, as shown, specified or required to implement the control strategies as described.

D. Configuration: All set points, tuning parameters and engineering scales etc. shall be documented for each control point and each control strategy on configuration sheets or similar documents. These documents shall be updated during Factory Testing and finally during start-up to be included with updated Process Control Descriptions.

E. Control Displays: Control displays shall be submitted for review. Displays shall clearly show information in a logical format including historical totals, alarms, and trending.

F. Control Logic: Control logic (PLC code) shall be submitted for review. Logic and tags shall be clearly commented and labeled. Logic shall be simplified to minimize the rungs within the ladder logic while accomplishing the required functions.

G. Object-Oriented Programming: CONTRACTOR shall use object-oriented programming (e.i. add-on instructions) for developing common or typical code. This includes processing of all raw inputs and outputs (e.g. scaling, alarm setpoints, debounce/delay times, enable/disable features). Motor function shall also be developed using object-oriented programming.

H. Plant Power Failure: Equipment controlled by the control system shall be programmed to resume operation for equipment in Remote-Auto. Equipment not in Remote-Auto control will require restart by the operator. Loss of power at the PLC panel shall be indicated by an alarm while the UPS provides emergency backup power.

I. Restart: All equipment and motors shall be manually restarted by an operator from an operator display following a power failure.

J. All relays, training parameters, scales, configuration values, mathematical constants, equations and set points given in the control strategies are adjustable over a wide range. The values given are initial and may change during Shop Drawing review and may have to be readjusted during start-up.

K. The control descriptions are written descriptions of the basic configuration and/or programming required to implement regulatory and sequential control of the unit process as shown on the P&ID. They do not in all cases describe the process characteristics fully. Finalizing and tuning of control descriptions, as required, by process characteristics shall be accomplished during start-up. Control descriptions shall fully reside in the memory of the designated PLC. The process inputs/outputs referred to in the control descriptions are shown on the P&IDs.

L. CONTRACTOR is responsible for updating Process Control Descriptions throughout the project and providing copies to the OWNER.

1.03 SUBMITTALS

A. Action Submittals: Submit the following:

1. Draft Process Control Descriptions:

a. Submit Draft Process Control Descriptions in accordance with Section 17401, Process Control System General Provisions to include the latest version of the Process Control Descriptions as programmed before the FAT.

2. Draft PLC and HMI programs:

a. Submit files for the new PLC and HMI programming. Programming files should be provided both in the native format and PDF. One PDF export should be provided for each PLC. The PDF for HMI programming should show each new or modified screen.

B. Closeout Submittals: Submit the following:

1. Operations and Maintenance Data:

a. Submit Final Process Control Description in accordance with Section 17401, Process Control System General Provisions to include the final version of the control system as programmed.

b. Submit final backups for PLC and HMI programming. Programming files should be provided both in the native format and PDF. One PDF export should be provided for each PLC. The PDF for HMI programming should show each new or modified screen.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 PROCESS CONTROL DISPLAYS

A. Process control displays or operator displays shall include the following:

a. Overview screen depicting the equipment, piping and all appurtenances. No process changes shall be initiated from the overview screen and all changes require accessing equipment popup or setpoint screens. Screen shall include status feedback of for the following:

b. Pump Status (for each pump)

1) Pump Remote Status (Auto/In Hand)
2) Pump Start/Stop Command State (Called/Not Called)
3) Pump Running Status (Running/Stopped)
4) Pump Ready Status
5) Pump Speed Feedback (### %)
6) Pump Speed Control (### %)
7) VFD Fault (Faulted/Not Faulted)
8) Moisture Alarm (Alarm/Not in Alarm)
9) High Temperature (Alarm/Not in Alarm)
10) Fail to Start (Alarm/Not in Alarm)
11) Fail to Stop (Alarm/Not in Alarm)
12) Pump in Alarm (In Alarm/Not in Alarm) - If an alarm is an equipment interlock and it is disabled, this status shall be displayed on the screen.

c. Level

1) Level Transmitter (### FT)
2) Level Low-Low Switch (Alarm/Not in Alarm)
3) Level High-High Switch (Alarm/Not in Alarm)
4) Backup Mode Active (Alarm/Not in Alarm)

d. Discharge Pressure (###.# PSI)

1) Discharge Pressure High Alarm Indicator (Alarm/Not in Alarm)

e. Flow Values and Indicators

1) Flow Value (#### GPM)
2) Flow Total Today (### KGAL)
3) Flow Total Yesterday (### KGAL)

f. Additional Statuses

1) Surge Tank Low Pressure (Alarm/Not in Alarm)
2) Surge Tank Low Level (Alarm/Not in Alarm)
3) Surge Tank High Level (Alarm/Not in Alarm)
4) Power Supply 1 Fail Status (Alarm/Not in Alarm)
5) Power Supply 2 Fail Status (Alarm/Not in Alarm)
6) PLC UPS Fail Status (Alarm/Not in Alarm)
7) PLC Cabinet Power Failure (Alarm/Not in Alarm)

g. Navigation pushbuttons to access the following screens and popups:

1) Site Overview Screen

2) Pump Popup
3) Setpoint Screen
4) Totalization Screen
5) Trend Screen
6) Alarm Screen
7) Raw IO Screens

h. Alarm Banner: Displaying up to 5 active alarms including acknowledged and unacknowledged alarms.

i. Reset Pushbutton: To reset all software alarms and latching once the condition has cleared.

j. Pump popup window will include:

k. Target Level Setpoint (FT)

l. Start Pump Level Setpoint (FT)

m. Stop Pump Level Setpoint (FT)

n. Start Lag Pump Speed Setpoint (%)

o. Start Lag Pump Delay (Seconds)

p. Stop Lag Pump Speed Setpoint (%)

q. Stop Lag Pump Delay (Seconds)

r. Lead pump select pushbuttons

s. Lead pump rotation enable pushbutton

t. Reset pushbutton (for fail to start and fail to stop)

u. Pump feedback including:

1) Stopped, Called, Starting, Running, Stopping
2) Speed feedback (%)
3) Today's starts and runtime (Hours:Minutes)
4) All alarms/interlocks, active and inactive, including analog alarms if used as in interlock
5) Discharge pressure (PSI)
6) Discharge flow rates (GPM)

v. Instrument popup windows.

w. The following instruments will have a popup open when clicked:

1) Wet Well Level Sensor
2) Discharge Pressure Sensor
3) Flow Meter

x. Each popup will display a trendline showing a trendline of the active value over the last hour.

y. Detailed setpoint screen to access administrative setpoints rarely used during normal operation, including configuration access button.

z. This window should be divided into subsections based on the following equipment:

1) Pump SPs and Alarms – including Minimum and Maximum Speed limits (%) restricting the Speed Command setpoint.
2) Discharge Pressure SPs and Alarms
3) Panel SPs and Alarms

aa. Each alarm should have the following configurable fields displayed:

1) Alarm Setpoints (if Analog/Software Alarms)

2) Delay Time
3) Enable/Disable

bb. Each alarm should have the following informational fields displayed:
1) Alarm State (Normal/In Alarm)
2) Latched State (If Alarm is latched)
3) Accumulated time of delay

cc. Totalization window including today, yesterday, this week, last week, this month, last month, and lifetime totals for the following:

dd. Total Flow

ee. Pump Runtime

ff. Pump Starts

gg. Pump/Motor Faults - Common fault counter representing the following alarms:
1) Pump Fail to Start
2) Pump Fail to Stop
3) Speed Variance Out of Deadband
4) Pump Phase Fail
5) Pump VFD Fail
6) Motor Temperature High

hh. Trending screens.

ii. Default display shall be over the past 24 hours.

jj. Data stored and accessible for up to one month.

kk. The following values will be options to display on one or more trend graphs:
1) Level
2) Flow
3) Discharge Pressure
4) Pump Running
5) Pump Speed Command
6) Pump Speed Feedback
7) Generator Fuel Level
8) Power-Real
9) Power-Reactive
10) Power-Apparent
11) Power Factor
12) Power-Frequency
13) Site Power-AB Volts
14) Site Power-BC Volts
15) Site Power-CA Volts

ll. Raw I/O screens.

mm. Display raw I/O feedback for each module in the PLC rack to be used in testing and troubleshooting.
1) Each Module should have each Input or Output point displayed and appropriately labeled, including Spares.
2) DIs and DOs should display the raw state value received or output by each point (0/1)

3) AIs and AOs should display the raw mA value, as scaled 0-20,000 in the IO module configuration, received or output by each point

nn. This shall be displayed over multiple screens for readability.

oo. Alarms screens.

pp. This screen should display a list of all active alarms, both acknowledged and unacknowledged.

qq. Shading and color of alarms should change depending on severity/priority of the alarm and whether the alarm has been acknowledged or unacknowledged.

rr. Historical alarms should be viewable, including previously active alarms. This should also display whether or not alarms were acknowledged before they cleared.

ss. Reset Pushbutton: To reset all software alarms and latching once the condition has cleared.

3.02 CONTROL DESCRIPTION – THICKENING SAF/DAF

A. DAF1

a. Based on the polymer VENDOR's recommended dosage, modulate the new polymer metering speed based on the flowrates of secondary sludge, primary sludge, washwater recovery (FIT 70-103), and primary scum (FIT 70-104) to DAF1.

b. Interlock automatic sludge and scum pumping if the polymer system is not in remote auto and free from alarm.

c. Provide remote manual control of the polymer speed

d. Based on the SAF VENDOR requirements, call SAF1 to start based on DAF1 flow (FIT 70-105)

B. DAF2

a. Based on the polymer VENDOR's recommended dosage, modulate the new polymer metering speed based on the flowrates of secondary sludge, primary sludge, washwater recovery (FIT 70-203), and primary scum (FIT 70-204) to DAF1.

b. Interlock automatic sludge and scum pumping if the polymer system is not in remote auto and free from alarm.

c. Provide remote manual control of the polymer speed

d. Based on the SAF VENDOR requirements, call SAF2 to start based on DAF2 flow (FIT 70-205)

C. All flow totalizations (refer to section 3.01) should be based on provided flowmeter pulse outputs.

3.03 CONTROL DESCRIPTION – DEWATERING

A. Replicate all existing functionality from the existing plant PLC to the replacement PLC75001. This includes systems not shown on the project drawings such as boilers and hot water pumps. Refer to I/O list in Section 17480.

B. Integrate all networked I/O from new vendor panel MCP75001 to new plant PLC PLC75001 necessary for monitoring and control. This includes statuses, alarms, and interlocks to and from MCP75001 to coordinate with plant process control.

C. All flow totalizations should be based on provided flowmeter pulse outputs.

3.04 CONTROL DESCRIPTION – WASHWATER POND PUMPING

A. Maintain existing washwater pond pump control logic.

B. For each washwater pond pump (P93111, P93112, P93121, P93122) add speed feedback indication based on new hardwired 4-20mA input from each new VFD.

C. For each washwater pond pump (P93111, P93112, P93121, P93122) add speed feedback control based on new hardwired 4-20mA output to each new VFD.

D. Add additional diagnostic, read only statuses from new Ethernet connections from each new VFD. These includes power monitoring and discrete alarm conditions.

3.05 CONTROL DESCRIPTION – PRIMARY SCUM PUMPING

A. Maintain existing primary scum pump control logic.

B. For each primary scum pump (P27201, P27202, P27203, P27204) add speed feedback indication based on new hardwired 4-20mA input from each new VFD.

C. For each primary scum pump (P27201, P27202, P27203, P27204) add speed feedback control based on new hardwired 4-20mA output to each new VFD.

D. Add additional diagnostic, read only statuses from new Ethernet connections from each new VFD. These includes power monitoring and discrete alarm conditions.

END OF SECTION

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ATTACHMENT 2

CCO No. 01

DATE: 2/12/2024

CITY OF UKIAH
CONTRACT CHANGE ORDER

Contract for: Spec 23-02 Thickening and Dewatering Improvements Project

Owner: City of Ukiah, 300 Seminary Avenue, Ukiah, California, 95482-5400

To: Pacific Infrastructure 435 Boulder Court Ste 200 Pleasanton CA 94566

You are hereby directed to make the herein described changes from the contract plans and specifications or do the following described work not included in the contract plans and specifications (described work continued page 2 if needed):

Field excavation (potholing) to locate and verify wash water (8" WW) piping. Reconfigure/Relocate the 8" WW connection from existing WW pipe to the existing wet well (refer to dwg 70-M-005), to discharge from the WW basins to an outfall at the northwest corner of the drying beds north of the DAFT equipment building.

Change requested by: Pacific Infrastructure

No.	Description of Changes - Itemized Breakdown	Quantity	UM	Unit Price	Estimated Increase/Decrease to Contract amount
1	Pothole and Relocate WW piping - labor, equipment, materials.	1	LS	11,000.10	11,000.10
ESTIMATED NET CHANGE IN CONTRACT PRICE					

CHANGE TO CONTRACT PRICE

Original Contract Price: $2,994,000

Current Contract Price Prior to this Change Order (include other approved change orders): $2,994,000

☑INCREASE ☐DECREASE ☐UNCHANGED Contract Price of this Change Order: 11,000,10

Contract Price Incorporating this Change Order: $3,005,000.10

CHANGE IN CONTRACT TIMES

Original Contract Times: 335 calendar days

Contract Times Prior to this Change Order (include other approved change orders): 0

☐INCREASE ☐DECREASE ☑UNCHANGED Contract Time of this Change Order: 0

Contract Time Incorparting this Change Order: 0

CITY OF UKIAH
CONTRACT CHANGE ORDER

In signing a Change Order, the Owner and Contractor acknowledge and agree that:

1. The Change Order constitutes full mutual accord and satisfaction for the change to the Work. The stipulated compensation (Contract Price or Contract Times, or both) set forth in the Change Order includes not only all direct costs of Contractor such as labor, material, job overhead, and profit markup, but also includes any costs for modifications or changes in sequence of work to be performed, delays rescheduling, disruptions, extended direct overhead or general overhead, acceleration, material, or other escalation which includes wages and other impact costs.
2. This Change Order will become a supplement to the Contract and all Contract provisions will apply hereto.
3. It is understood that this Change Order shall be effective on the date the Owner authorizes the Change Order by their signature.
4. No reservation of rights to pursue subsequent claims on the Change Order will be made by either party.
5. No subsequent claim or amendment of the Contract Documents will arise out of or as a result of the Change Order.

Recommended By: Jason R Benson — Digitally signed by Jason R Benson, DN: C=US, E=jbenson@cityofukiah.com, O="City of Ukiah ", OU=Public Works, CN=Jason R Benson, Reason: I am the author of this document, Contact Info: 707-463-6284, Date: 2024.02.12 09:54:18-08'00'

INSERT NAME AND TITLE HERE — 2/12/2024 — Date

Approved By: Jason R Benson — Digitally signed by Jason R Benson, DN: C=US, E=jbenson@cityofukiah.com, O="City of Ukiah ", OU=Public Works, CN=Jason R Benson, Reason: I am approving this document, Contact Info: 707-463-6284, Date: 2024.02.12 10:03:35-08'00'

INSERT NAME AND TITLE HERE — 2/12/2024 — Date

Accepted: Jon Re

INSERT NAME AND TITLE HERE — 2024-2-14 — Date

This information will be issued as a record of any changes to the original construction contract.

CCO No.	002	
DATE:	3/7/2024	

CONTRACT CHANGE ORDER

Contract for: Thickening and Dewatering Improvements, Spec. 2023-02

Owner: City of Ukiah, 300 Seminary Avenue, Ukiah, California, 95482-5400

To: Pacific Infrastructure 435 Boulder Court Ste 200 Pleasanton CA 94566

You are hereby directed to make the herein described changes from the contract plans and specifications or do the following described work not included in the contract plans and specifications (described work continued page 2 if needed):

Proceed with all work (material, equipment, labor) associated with the changes in work associated with Area 70 and Area 75 as described within PCO 2, 3, 4, 5, 6, 10A, 10B, 11, and 12 -- piping, fasteners, instrumentation, underground electric, etc.

Change requested by: Pacific Infrastructure

No.	Description of Changes - Itemized Breakdown	Quantity	UM	Unit Price	Estimated Increase/Decrease to Contract amount
1	Dewatered Solids Containment Deletion	1	LS	$ (21,249.85)	$ (21,249.85)
2	Area 75 4-Inch Sludge Line Modifications	1	LS	$ 4,637.85	$ 4,637.85
3	Area 75 8-Inch Sludge Pipe Support	1	LS	$ 7,941.79	$ 7,941.79
4	Area 75 Instruments	1	LS	$ 19,932.28	$ 19,932.28
5	Change AG fasteners to 316 SS	1	LS	$ 3,096.41	$ 3,096.41
6	4" PSC & 6" MS Alternate Tie-In Locations- DAFT 2 Only	1	LS	$ 2,571.86	$ 2,571.86
7	4" PSC, 6" MS, & 8" WW Alternate Tie-In Locations- DAFT 1 Only	1	LS	$ 8,680.82	$ 8,680.82
8	8" wash water differing site conditions	1	LS	$ 6,436.83	$ 6,436.83
9	Area 70 Underground Conduit Pricing	1	LS	$ 14,240.91	$ 14,240.91
ESTIMATED NET CHANGE IN CONTRACT PRICE					**$ 46,288.90**

CONTRACT CHANGE ORDER

CHANGE TO CONTRACT PRICE

Original Contract Price:	$ 2,994,000
Current Contract Price Prior to this Change Order (include other approved change orders):	$ 3,005,000.10
☑INCREASE ☐DECREASE ☐UNCHANGED Contract Price of this Change Order:	$ 46,288.90
Contract Price Incorporating this Change Order:	$ 3,051,289.00

CHANGE IN CONTRACT TIMES

Original Contract Times:	335 calendar days
Contract Times Prior to this Change Order (include other approved change orders):	335 calendar days
☐INCREASE ☐DECREASE ☐UNCHANGED Contract Time of this Change Order:	2
Contract Time Incorporating this Change Order	337 calendar days

CONTRACT CHANGE ORDER

In signing a Change Order, the Owner and Contractor acknowledge and agree that:

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4. No reservation of rights to pursue subsequent claims on the Change Order will be made by either party.
5. No subsequent claim or amendment of the Contract Documents will arise out of or as a result of the Change Order.

Recommended By: Jason R Benson

Digitally signed by Jason R Benson
DN: C=US, E=jbenson@cityofukiah.com, O="City of Ukiah ", OU=Public Works, CN=Jason R Benson
Reason: I am the author of this document
Contact Info: 707-463-6284
Date: 2024.03.07 10:22:27-08'00'

3/7/2024
Date

Approved By: Jason R Benson

Digitally signed by Jason R Benson
DN: C=US, E=jbenson@cityofukiah.com, O="City of Ukiah ", OU=Public Works, CN=Jason R Benson
Reason: I am approving this document
Contact Info: 707-463-6284
Date: 2024.03.07 10:22:40-08'00'

Date

Accepted: Jon Re

2024-3-7
Date

This information will be issued as a record of any changes to the original construction contract.

CCO No.	003	
DATE:	5/15/2024	

CONTRACT CHANGE ORDER

Contract for: Thickening and Dewatering Improvements, Spec. 2023-02

Owner: City of Ukiah, 300 Seminary Avenue, Ukiah, California, 95482-5400

To: Pacific Infrastructure 435 Boulder Court Ste 200 Pleasanton CA 94566

You are hereby directed to make the herein described changes from the contract plans and specifications or do the following described work not included in the contract plans and specifications (described work continued page 2 if needed):

Proceed with all work (material, equipment, labor) associated with the changes in work associated with Area 70 and Area 75 as described within PCO 4, 8, 16, 18, 19, 20, 21 -- piping and fasteners, pipe supports and foundations, equipment layout modifications, etc.

Change requested by: Pacific Infrastructure

No.	Description of Changes - Itemized Breakdown	Quantity	UM	Unit Price	Estimated Increase/Decrease to Contract amount
1	Area 75 8-Inch Sludge Pipe Support – deletion from CO2 (PCO 4)	1	LS	$ (7,941.79)	$ (7,941.79)
2	Pipe support footings (PCO 8)	1	LS	$ 25,900.21	$ 25,900.21
3	Lamp post foundations (PCO 16)	1	LS	$ 2,116.98	$ 2,116.98
4	Screw press layout modifications (PCO 18)	1	LS	$ 3,799.87	$ 3,799.87
5	mcp75001 Equipment Pad Extra work (PCO 19)	1	LS	$ 1,138.41	$ 1,138.41
6	Delete pressurization pump slab credit (PCO 20)	1	LS	$ (7,486.74)	$ (7,486.74)
7	Area 75 Floc Tank flange size change (PCO 21)	1	LS	$ 2,079.92	$ 2,079.92
ESTIMATED NET CHANGE IN CONTRACT PRICE					**$ 19,606.86**

CONTRACT CHANGE ORDER

CHANGE TO CONTRACT PRICE

Original Contract Price:	$ 2,994,000
Current Contract Price Prior to this Change Order (include other approved change orders):	$ 3,005,000.10
☑INCREASE ☐DECREASE ☐UNCHANGED Contract Price of this Change Order:	$ 19,606.86
Contract Price Incorporating this Change Order:	$ 3,070,895.86

CHANGE IN CONTRACT TIMES

Original Contract Times:	335 calendar days
Contract Times Prior to this Change Order (include other approved change orders):	337 calendar days
☐INCREASE ☐DECREASE ☐UNCHANGED Contract Time of this Change Order:	3
Contract Time Incorporating this Change Order	340 calendar days

CONTRACT CHANGE ORDER

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5. No subsequent claim or amendment of the Contract Documents will arise out of or as a result of the Change Order.

Recommended By: Jason R Benson — Digitally signed by Jason R Benson DN: C=US, E=jbenson@cityofukiah.com, O="City of Ukiah ", OU=Public Works, CN=Jason R Benson Reason: I am the author of this document Contact Info: 707-463-6284 Date: 2024.05.15 14:30:00-07'00' — 5/15/2024 Date

Approved By: Jason R Benson — Digitally signed by Jason R Benson DN: C=US, E=jbenson@cityofukiah.com, O="City of Ukiah ", OU=Public Works, CN=Jason R Benson Reason: I am approving this document Contact Info: 707-463-6284 Date: 2024.05.15 14:30:16-07'00' — Date

Accepted: Jon Re — 2024-5-16 Date

This information will be issued as a record of any changes to the original construction contract.

CCO No.	004	
DATE:	6/28/2024	

CONTRACT CHANGE ORDER

Contract for: Thickening and Dewatering Improvements, Spec. 2023-02

Owner: City of Ukiah, 300 Seminary Avenue, Ukiah, California, 95482-5400

To: Pacific Infrastructure 435 Boulder Court Ste 200 Pleasanton CA 94566

You are hereby directed to make the herein described changes from the contract plans and specifications or do the following described work not included in the contract plans and specifications (described work continued page 2 if needed):

Proceed with all work (material, equipment, labor) associated with the changes in work associated with Area 70 and Area 75 as described within PCO 17, 22 -- DAFT Building mechanical piping; Screw Press conveyor instruments.

Change requested by: Pacific Infrastructure

No.	Description of Changes - Itemized Breakdown	Quantity	UM	Unit Price	Estimated Increase/Decrease to Contract amount
1	DAFT Building mechanical extra work - Galvanized Steel and Schedule 80 PVC Pipe, Fitting, Valves (PCO 17)	1	LS	$ 5,735.43	$ 5,735.43
2	Conveyor instruments, by Coast Mountain Electric (PCO 22)	1	LS	$ 23,137.44	$ 23,137.44
ESTIMATED NET CHANGE IN CONTRACT PRICE					**$ 28,872.87**

CONTRACT CHANGE ORDER

CHANGE TO CONTRACT PRICE

Original Contract Price:	$ 2,994,000
Current Contract Price Prior to this Change Order (include other approved change orders):	$ 3,070,895.86
☑INCREASE ☐DECREASE ☐UNCHANGED Contract Price of this Change Order:	$ 28,872.87
Contract Price Incorporating this Change Order:	$ 3,099,768.73

CHANGE IN CONTRACT TIMES

Original Contract Times:	335 calendar days
Contract Times Prior to this Change Order (include other approved change orders):	340 calendar days
☐INCREASE ☐DECREASE ☑UNCHANGED Contract Time of this Change Order:	0 calendar days
Contract Time Incorporating this Change Order	0 calendar days

CONTRACT CHANGE ORDER

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Recommended By: Jason R Benson — Digitally signed by Jason R Benson DN: C=US, E=jbenson@cityofukiah.com, O="City of Ukiah ", OU=Public Works, CN=Jason R Benson Reason: I am the author of this document Contact Info: 707-463-6284 Date: 2024.06.28 12:45:03-07'00' — 6/28/2024 Date

Approved By: Jason R Benson — Digitally signed by Jason R Benson DN: C=US, E=jbenson@cityofukiah.com, O="City of Ukiah ", OU=Public Works, CN=Jason R Benson Reason: I am approving this document Contact Info: 707-463-6284 Date: 2024.06.28 12:45:20-07'00' — Date

Accepted: Jon Re — 2024-6-28 Date

This information will be issued as a record of any changes to the original construction contract.

CCO No.	005	
DATE:	7/10/2024	

CONTRACT CHANGE ORDER

Contract for: Thickening and Dewatering Improvements, Spec. 2023-02

Owner: City of Ukiah, 300 Seminary Avenue, Ukiah, California, 95482-5400

To: Pacific Infrastructure 435 Boulder Court Ste 200 Pleasanton CA 94566

You are hereby directed to make the herein described changes from the contract plans and specifications or do the following described work not included in the contract plans and specifications (described work continued page 2 if needed):

Credit for two (2) totes of temporary sludge dewatering polymer. Refer to Polydine Inc. Invoice No. 1800122 for cost.

Change requested by: Pacific Infrastructure

No.	Description of Changes - Itemized Breakdown	Quantity	UM	Unit Price	Estimated Increase/Decrease to Contract amount
1	Credit for two (2) totes of temporary sludge dewatering polymer. (PCO 23)	1	LS	- $ 9,014.85	- $ 9,014.85
ESTIMATED NET CHANGE IN CONTRACT PRICE					**- $ 9,014.85**

CONTRACT CHANGE ORDER

CHANGE TO CONTRACT PRICE

Original Contract Price:	$ 2,994,000
Current Contract Price Prior to this Change Order (include other approved change orders):	$ 3,099,768.73
☐INCREASE ☑DECREASE ☐UNCHANGED Contract Price of this Change Order:	$ 9,014.85
Contract Price Incorporating this Change Order:	$ 3,090,753.88

CHANGE IN CONTRACT TIMES

Original Contract Times:	335 calendar days
Contract Times Prior to this Change Order (include other approved change orders):	340 calendar days
☐INCREASE ☐DECREASE ☑UNCHANGED Contract Time of this Change Order:	0 calendar days
Contract Time Incorporating this Change Order	0 calendar days

CONTRACT CHANGE ORDER

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Recommended By: Jason R Benson — Digitally signed by Jason R Benson DN: C=US, E=jbenson@cityofukiah.com, O="City of Ukiah ", OU=Public Works, CN=Jason R Benson Reason: I am the author of this document Contact Info: 707-463-6284 Date: 2024.07.10 11:22:31-07'00' — 7/10/2024 Date

Approved By: Jason R Benson — Digitally signed by Jason R Benson DN: C=US, E=jbenson@cityofukiah.com, O="City of Ukiah ", OU=Public Works, CN=Jason R Benson Reason: I am approving this document Contact Info: 707-463-6284 Date: 2024.07.10 11:23:15-07'00' — Date

Accepted: Jon Re — 2024-7-10 Date

This information will be issued as a record of any changes to the original construction contract.

CCO No.	006	
DATE:	7/11/2024	

CONTRACT CHANGE ORDER

Contract for: Thickening and Dewatering Improvements, Spec. 2023-02

Owner: City of Ukiah, 300 Seminary Avenue, Ukiah, California, 95482-5400

To: Pacific Infrastructure 435 Boulder Court Ste 200 Pleasanton CA 94566

You are hereby directed to make the herein described changes from the contract plans and specifications or do the following described work not included in the contract plans and specifications (described work continued page 2 if needed):

Proceed with all work (material, equipment, labor) required to relocate flow meter transmitters from outside racks to inside the Conex box as preferred by the City. Coastal Mountain Electric will perform this work, which includes installing Unistrut inside the Conex box for mounting meters, installing additional conduit and junction boxes to pull cables from outside the Conex box to the new meter locations inside, relocating the previously installed units to the new location, and providing new cables for all meters due to insufficient length of existing cables. Total cost: $14,114.31. (PCO #25)

Change requested by: Pacific Infrastructure

No.	Description of Changes - Itemized Breakdown	Quantity	UM	Unit Price	Estimated Increase/Decrease to Contract amount
1	Relocate flow meter transmitters inside Conex box. Coastal Mountain Electric will perform all required work.	1	LS	$ 14,114.31	$ 14,114.31
ESTIMATED NET CHANGE IN CONTRACT PRICE					**$ 14,114.31**

CONTRACT CHANGE ORDER

CHANGE TO CONTRACT PRICE

Original Contract Price:	$ 2,994,000
Current Contract Price Prior to this Change Order (include other approved change orders):	$ 3,090,753.88
☑INCREASE ☐DECREASE ☐UNCHANGED Contract Price of this Change Order:	$ 14,114.31
Contract Price Incorporating this Change Order:	$ 3,104,868.19

CHANGE IN CONTRACT TIMES

Original Contract Times:	335 calendar days
Contract Times Prior to this Change Order (include other approved change orders):	340 calendar days
☐INCREASE ☐DECREASE ☑UNCHANGED Contract Time of this Change Order:	0 calendar days
Contract Time Incorporating this Change Order	0 calendar days

CONTRACT CHANGE ORDER

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5. No subsequent claim or amendment of the Contract Documents will arise out of or as a result of the Change Order.

Recommended By: Jason R Benson — Digitally signed by Jason R Benson DN: C=US, E=jbenson@cityofukiah.com, O="City of Ukiah ", OU=Public Works, CN=Jason R Benson Reason: I am the author of this document Contact Info: 707-463-6284 Date: 2024.07.11 16:13:11-07'00' — 7/11/2024 Date

Approved By: Jason R Benson — Digitally signed by Jason R Benson DN: C=US, E=jbenson@cityofukiah.com, O="City of Ukiah ", OU=Public Works, CN=Jason R Benson Reason: I am approving this document Contact Info: 707-463-6284 Date: 2024.07.11 16:13:21-07'00' — Date

Accepted: Jon Re — 2024-7-12 Date

This information will be issued as a record of any changes to the original construction contract.

CCO No.	007	
DATE:	11/12/2024	

CONTRACT CHANGE ORDER

Contract for: Thickening and Dewatering Improvements, Spec. 2023-02

Owner: City of Ukiah, 300 Seminary Avenue, Ukiah, California, 95482-5400

To: Pacific Infrastructure 435 Boulder Court Ste 200 Pleasanton CA 94566

You are hereby directed to make the herein described changes from the contract plans and specifications or do the following described work not included in the contract plans and specifications (described work continued page 2 if needed):

Proceed with all work, including materials, equipment, labor, and subcontracted electrical work by Coastal Mountain Electric, to replace the existing sludge pump, base plate, piping, and fittings as required by Pacific Infrastructure.
Total cost: $14,043.26 (PCO #24).

Change requested by: Pacific Infrastructure

No.	Description of Changes - Itemized Breakdown	Quantity	UM	Unit Price	Estimated Increase/Decrease to Contract amount
1	Replacement of sludge pump, base plate, piping, fittings, and electrical work.	1	LS	$14,043.26	$14,043.26
ESTIMATED NET CHANGE IN CONTRACT PRICE					$14,043.26

CONTRACT CHANGE ORDER

CHANGE TO CONTRACT PRICE

Original Contract Price:	$ 2,994,000
Current Contract Price Prior to this Change Order (include other approved change orders):	$ 3,104,868.19
☑INCREASE ☐DECREASE ☐UNCHANGED Contract Price of this Change Order:	$14,043.26
Contract Price Incorporating this Change Order:	$ 3,118,911.45

CHANGE IN CONTRACT TIMES

Original Contract Times:	335 calendar days
Contract Times Prior to this Change Order (include other approved change orders):	340 calendar days
☐INCREASE ☐DECREASE ☐UNCHANGED Contract Time of this Change Order:	25 calendar days
Contract Time Incorporating this Change Order	365 calendar days

CONTRACT CHANGE ORDER

In signing a Change Order, the Owner and Contractor acknowledge and agree that:

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Recommended By: Jason R Benson

Digitally signed by Jason R Benson
DN: C=US, E=jbenson@cityofukiah.com, O="City of Ukiah ", OU=Public Works, CN=Jason R Benson
Reason: I am the author of this document
Contact Info: 707-463-6284
Date: 2024.11.12 11:05:21-08'00'

11/12/2024
Date

Approved By: Jason R Benson

Digitally signed by Jason R Benson
DN: C=US, E=jbenson@cityofukiah.com, O="City of Ukiah ", OU=Public Works, CN=Jason R Benson
Reason: I am approving this document
Contact Info: 707-463-6284
Date: 2024.11.12 11:05:33-08'00'

Date

Accepted: f057c1cb-f20e-4290-aeb2-1e1460b359df

Digitally signed by f057c1cb-f20e-4290-aeb2-1e1460b359df
Date: 2024.11.14 09:08:19 -08'00'

2024-11-14
Date

This information will be issued as a record of any changes to the original construction contract.

CCO No.	008	
DATE:	4/17/2025	

CONTRACT CHANGE ORDER

Contract for: Thickening and Dewatering Improvements, Spec. 2023-02

Owner: City of Ukiah, 300 Seminary Avenue, Ukiah, California, 95482-5400

To: Pacific Infrastructure 435 Boulder Court Ste 200 Pleasanton CA 94566

You are hereby directed to make the herein described changes from the contract plans and specifications or do the following described work not included in the contract plans and specifications (described work continued page 2 if needed):

Proceed with all work, including materials, equipment, labor, and subcontracted electrical work by Coastal Mountain Electric, and the additional programming costs for integration as required by JM Intergration.
Total cost: $32,978.39 (PCO #26).

Change requested by: Pacific Infrastructure

No.	Description of Changes - Itemized Breakdown	Quantity	UM	Unit Price	Estimated Increase/Decrease to Contract amount
1	Additional programming work performed by JM Intergration.	1	LS	$ 32,978.39	$ 32,978.39
ESTIMATED NET CHANGE IN CONTRACT PRICE					**$ 32,978.39**

CONTRACT CHANGE ORDER

CHANGE TO CONTRACT PRICE

Original Contract Price:	$ 2,994,000
Current Contract Price Prior to this Change Order (include other approved change orders):	$ 3,118,911.45
☑INCREASE ☐DECREASE ☐UNCHANGED Contract Price of this Change Order:	$ 32,978.39
Contract Price Incorporating this Change Order:	$ 3,151,889.84

CHANGE IN CONTRACT TIMES

Original Contract Times:	335 calendar days
Contract Times Prior to this Change Order (include other approved change orders):	365 calendar days
☑INCREASE ☐DECREASE ☐UNCHANGED Contract Time of this Change Order:	135 calendar days
Contract Time Incorporating this Change Order	500 calendar days

CONTRACT CHANGE ORDER

In signing a Change Order, the Owner and Contractor acknowledge and agree that:

1. The Change Order constitutes full mutual accord and satisfaction for the change to the Work. The stipulated compensation (Contract Price or Contract Times, or both) set forth in the Change Order includes not only all direct costs of Contractor such as labor, material, job overhead, and profit markup, but also includes any costs for modifications or changes in sequence of work to be performed, delays rescheduling, disruptions, extended direct overhead or general overhead, acceleration, material or other escalation which includes wages and other impact costs.
2. This Change Order will become a supplement to the Contract and all Contract provisions will apply hereto.
3. It is understood that this Change Order shall be effective on the date the Owner authorizes the Change Order by their signature.
4. No reservation of rights to pursue subsequent claims on the Change Order will be made by either party.
5. No subsequent claim or amendment of the Contract Documents will arise out of or as a result of the Change Order.

Recommended By: 4/17/2025
Date

Approved By: 4/17/2025
Date

Accepted: 2025-4-22
Date

This information will be issued as a record of any changes to the original construction contract.

Please return to:

CITY OF UKIAH
300 Seminary Avenue
Ukiah, California 95482-5400
(707) 463-6200

NOTICE OF COMPLETION

NOTICE IS HEREBY GIVEN:

1. That the project described as: Thickening and Dewatering Improvement Project, Specification 23-02.

2. That the nature of the title to the construction and installation of thickening and dewatering improvements at the City of Ukiah Wastewater Treatment Plant.

3. That on the 29th day of August 2025, the Contract work for this project was actually completed.

4. That the name and address of the Contractor is Pacific Infrastructure, 435 Boulder Court, Ste 200, Pleasanton, CA 94566.

5. That the real property herein referred to is situated in the County of Mendocino, State of California, and is described as follows: City-owned property identified as Wastewater Treatment Plant.

I hereby certify under penalty of perjury that the forgoing is true and correct:

City Council Approval CITY OF UKIAH, a Municipal Corporation

_____ By: _____ _____
Date Kristine Lawler, City Clerk Date

State of California

County of Mendocino

Exempt from recording fees pursuant to Government Code Section 27383

Agenda Item No: 12.a.

MEETING DATE/TIME: 9/3/2025

ITEM NO: 2025-962

City of Ukiah

AGENDA SUMMARY REPORT

SUBJECT: Consideration and Possible Adoption of a Resolution Amending the Fee Schedule of the Planning and Building Divisions of the Community Development Department to Eliminate Fee Discounts for Select Uses and Establish an Administrative Use Permit Fee.

DEPARTMENT: Community Development

PREPARED BY: Craig Schlatter, Community Development Director

PRESENTER: Craig Schlatter, Community Development Director

ATTACHMENTS:

1. Reso 2024-05 - Fees for Planning and Building Permits and Services
2. Fee Reductions-Discounts Table
3. 2-21-24 and 5-15-24 ASRs
4. Planning Division Fee Schedule Discounts Report May 2024
5. Planning Services Fees Comparison- City of Ukiah.County of Mendocino
6. Draft Resolution- Planning and Building Services Fee Schedule

Summary: Council will consider and possibly adopt a resolution amending the Fee Schedule for the Planning and Building Divisions of the Community Development Department to eliminate fee discounts for select uses and establish an Administrative Use Permit fee.

Background: The Community Development Department currently consists of the Divisions of Planning, Building, Housing, Code Enforcement, Fire Prevention, Grants Management, Business Services, and Climate Adaptation and Resilience. Below is a chronology of past Council directives and actions related to amendments to the Planning and Building Services Divisions, the two Cost Recovery divisions of the Department, within the last two years, along with additional detail provided through Attachments. Staff action related to the below history has been undertaken in coordination with the Fee Schedule Review Ad Hoc Committee and Zoning Reform Ad Hoc Committee, both of which consist of Mayor Crane and Councilmember Orozco as appointed Councilmembers.

February 2024 Fee Schedule Amendments and Council-Directed Tasks

On February 21, 2024, Council adopted Resolution No. 2024-05 (Attachment 1), amending the Fee Schedule of the Planning and Building Divisions of the Community Development Department. In addition to amendments made to the Fee Schedule, Council also directed Staff to revise the layout of the online fee schedule posted on the webpage of the Planning Division and available at the front counter such that terms are well-explained and the information is easier to access/understand. Additionally, Council directed Staff to conduct further research and analysis into the existing fee reduction categories (Attachment 2 and contained within the table of Resolution No. 2024-05, under #13) and present a report to Council with recommendations on those fee reductions.

May 2024: Completion of Tasks 1 and 2 and Additional Council Direction

Shortly after Council adoption of Resolution No. 2024-05, Staff posted a revised layout of the online fee schedule on the webpage of the Planning Division (https://cityofukiah.com/community-development/planning-services/), as well as making it available at the front counter. To ensure terms were well-explained and the

information easier to access/understand, Staff also developed a new supplement to the Planning Division's fee schedule, which is also accessible online and at the front counter of the Community Development Department (titled Supplement to City of Ukiah Fee Schedule).

With Task 1 completed, on May 15, 2024, Staff presented a report and recommendations regarding research into the existing fee discount categories of select services of the Planning Division of the Community Development Department. The report concluded the following:

1. Based on the research and analysis in this report, Staff finds no evidence that the fee discounts incentivized development of the types of projects originally envisioned. Developers have commented throughout the last seven years that they are primarily seeking certainty in the entitlement process, rather than reduced fees.

2. Planning approaches such as "performance zoning," where a city or county adopts an administrative approval process for certain uses that meet objective performance standards, may prove more effective in incentivizing the types of projects first envisioned within the 2016 fee schedule.

3. Current State laws, such as the California Building Code, mandate such energy conservation and solar measures listed on the 2016 fee schedule. Where not mandated by State law, the City has integrated many of the Project Design and Energy and Water Conservation features into the Objective Design and Development Standards for new housing projects. The same types of standards could be designed for commercial projects.

Staff also proposed two recommendations, which Council directed, consisting of the following:

1. Direct Staff and the Zoning Reform Ad Hoc to explore the development of a new Administrative Use Permit (AUP) and/or make additional recommendations on how to streamline entitlement processes. After preliminary discussions with the Zoning Reform Ad Hoc, at the minimum AUPs may be appropriate for former "level 1" minor permit types, as well as public art, community gardens, outdoor dining, live entertainment, sidewalk cafes, and tasting rooms.

2. Direct Staff to bring back an amendment to the existing fee schedule at a future Council meeting to remove fee discounts and/or make additional changes to fees for AUPs and other planning permits.

Agenda Summary Reports detailing the analysis pertaining to recommendations for the February 21, 2024, and May 15, 2024, meetings are included as Attachment 3.

Development and Adoption of AUP Ordinance: May 2024-August 2025

The Zoning Reform Ad Hoc met with and provided input to Staff approximately once every 2-3 months beginning in 2024. Upon Staff's creation of a draft outline of the Ordinance and after conferring with the Chair of the Mendocino County Airport Land Use Commission (ALUC), in accordance with Policy 1.4(b) of the Ukiah Municipal Airport Land Use Compatibility Plan (UKIALUCP), in October 2024 Staff referred the outline of the ordinance to the ALUC for a consistency determination. On December 9, 2024, the ALUC determined the proposed approach consistent, as well as directing City Staff's recommendation of an annual report to the ALUC each year, starting in January 2026, for future City ordinances. After finalizing the language of the Ordinance in early 2025, Staff presented the Ordinance to Planning Commission on July 9, 2025, which the Commission unanimously recommended to the City Council. On August 20, 2025, Council unanimously introduced the Ordinance, which is proposed for adoption on September 3, 2025.

Discussion: Of the Council-directed tasks and actions, the one remaining task is Council consideration of the elimination of the discounts for select fees of the Planning Services Division. Staff is also proposing a fee for the new Administrative Use Permit.

Fee Schedule Discount Recommendation

As mentioned above, Staff presented a full analysis of the fee discounts in May 2024. That report is included again as Attachment 4. The original purpose of the fee schedule discounts can be found in past staff reports written by the previous Planning and Community Development Director, Charley Stump. Proposed fee

reductions were suggested as "incentives" to encourage "...projects that provide significant economic development, new industrial/manufacturing development, significant energy conservation, and certain public benefits." (Director Stump, 4/20/16 staff report and Page 2 of Attachment 4).

One of the conclusions reached by Staff after analyzing permit history since the fee discounts had been in place was that there was no evidence fee discounts incentivized development of the types of projects originally envisioned. Instead, project applicants have commented that they are primarily seeking certainty in the entitlement process, rather than reduced fees. Additionally, it appears that if fees are set at rates that are "excessive," or above regional market rates for fees, they can act as barriers to development. (pages 3 and 4 of Attachment 4)

Through the Department's reorganized structure of multiple team members of the Department being cross-trained to provide a suite of different Community Development services, plus significantly increased grant revenue, the Department has been able to literally do more with a lessening impact to the General Fund. Further increases in efficiency of service provision and economies of scale have in recent years accelerated this trend, the result of which, among other positives such as quicker processing times and more responsive customer service, is less reliance on revenue from fees. Because the City relies less on revenue from fees from planning and building permits, it can set competitive rates for these services relative to area jurisdictions. As an example of this, see Attachment 5 for a comparison of select planning permit fees between the City of Ukiah and the County of Mendocino.

AUP Fee Recommendation

Based on time and cost spent on similar types of processes, such as the Director's Determination, Staff is recommending a flat fee for the Administrative Use Permit of $350. The fee would provide for application intake and processing, as well as initial analysis and recommendations from a planner and review and possible approval, with findings, from the Community Development Director. As this new permit type is deployed and utilized by the community, Staff will evaluate if this fee is appropriate and update the Council in the future if the fee should be adjusted.

Based on the analysis and research conducted within this staff report, as well as staff reports and research during the last two years and with input from the Fee Schedule and Zoning Reform Ad Hoc Committees, Staff recommends Council adopt the Resolution in Attachment 6 amending the Fee Schedule of the Planning and Building Services Divisions of the Community Development Department.

Recommended Action: Adopt Resolution amending the Fee Schedule for the Planning and Building Divisions of the Community Development Department.

BUDGET AMENDMENT REQUIRED: No

CURRENT BUDGET AMOUNT: N/A

PROPOSED BUDGET AMOUNT: N/A

FINANCING SOURCE: N/A

REVENUE: Yes / No GRANT: Yes / No N/A

PREVIOUS CONTRACT/PURCHASE ORDER NO.: N/A

COORDINATED WITH: Zoning Reform Ad Hoc Committee

STRATEGIC PLAN (SP): N/A

CLIMATE INITIATIVES (CI): N/A

GENERAL PLAN ELEMENTS (GP): N/A

Approved: Sage Sangiacomo, City Manager

RESOLUTION NO. 2024-05

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF UKIAH ESTABLISHING UPDATED FEES FOR PLANNING AND BUILDING PERMITS AND SERVICES PURSUANT TO CITY ADOPTED ORDINANCE 880

WHEREAS:

1. Community Development Department ("Department") Planning and Building Permit service fees have not been updated since 2020; and

2. The Department conducted a Planning Division fee analysis and time study for permits processed from 2022 and 2023, comparing to data from a previous fee analysis conducted from 2017 to 2019, to determine the average amount of processing time per permit, as well as the total costs to process the permit. Planning permit fee modifications are in part based on this analysis; and

3. The City Council appointed a Community Development Department Fee Schedule Ad Hoc Committee comprised of Councilmembers Crane and Orozco to provide input and recommendations in the updating of the Department's Fee Schedule; and

4. The existing fee for 100% cost recovery projects was first adopted in 2007. To reduce invoicing and processing time for the Finance Department and the number of requests made to the applicant for additional deposits plus reflect the actual cost of the City in processing these permits, it is reasonable and appropriate to set the Community Development Department cost recovery hourly rate based on a per staff position "fully burdened" hourly rate adjusted annually by the Finance Director within the Master Fee Schedule. The fully burdened hourly rate will be inclusive of salary and benefits for each staff position of the Community Development Department, as well as overhead costs, which will include the at-cost charge for direct costs and a percentage of costs according to the most recently adopted Cost Allocation Plan; and

5. Due to the increased costs (salary, benefits, legal ads, postage, etc.) for processing of major planning permits- defined for the purposes of this Fee Schedule as major use permits, major site development permits, major amendments to major use permits and major site development permits, major variances, major subdivisions, general plan amendments, pre-zonings/re-zonings/annexations, planned developments, and specific plan/master plan reviews- and to reduce invoicing and processing time for the Finance Department and the number of requests made to the applicant for additional deposits plus reflect the actual cost of the City in processing these permits, it is reasonable and appropriate to increase the initial deposit amount for such permits, which are fully cost recoverable, from $1,000.00-$3,000.00 to $3,000; and

6. Due to the generally non-controversial nature and limited community impact of level 1 minor permits- defined for the purposes of this Fee Schedule as minor site development permits, minor use permits, amendments to minor site development permits and minor use permits, minor variances, and minor subdivisions -and the opportunity for streamlined processing of such permits, the two different levels for minor permits, level 1 and level 2, are hereby eliminated, and all minor permits will be processed as what was formerly the level 2 permit; and

7. Due to the increased costs (salary, benefits, legal ads, postage, etc.) for processing of minor planning permits- defined for the purposes of this Fee Schedule as minor site development permits, minor use permits, amendments to minor site development permits and minor use permits, minor variances, and minor subdivisions- it is reasonable and appropriate to increase the fee for such permits from $900.00 to $1,000.00; and

8. Due to the increased costs (salary, benefits, legal ads, postage, etc.) for processing of Director Determinations, it is reasonable and appropriate to increase the fee from $300.00 to $500; and

9. Due to the increased costs (salary, benefits, legal ads, postage, etc.) for processing of Boundary Line Adjustments and Lot Mergers on non-residentially zoned parcels, it is reasonable and appropriate to increase the fee from $350 to $500; and

10. In alignment with the City's housing goals, the City has determined that a fee reduction is appropriate for Boundary Line Adjustments and Lot Mergers undertaken on residentially zoned parcels. Fees for the processing of such applications on residentially-zoned parcels shall be $350; with fees further discounted to $260 for affordable housing projects and $170 for special needs housing projects; and

11. Due to the cost recovery nature of major permits, and to reduce the invoicing and processing time for the Finance Department and the number of requests made to the applicant for additional deposits plus reflect the actual cost of the City in processing these permits, it is reasonable and appropriate to eliminate the stand-alone flat fee of $50 for "Continuations of Public Hearings at the Applicant's Request" and instead roll these costs directly into the cost of the major planning permit(s); and

12. A public notice was posted in the Ukiah Daily Journal on February 11, 2024 and online on the City's Press Releases, Notices, and Bulletins webpage to notify the public of the possible changes to the Fee Schedule and give the public an opportunity to make their comments known; and

13. The City has determined that a fee reduction for projects that promote/provide economic development, affordable and special needs housing, energy conservation and public benefits are still reasonable and appropriate. These fees have not been adjusted and include the following:

Economic Development Energy Conservation Public Benefit Components	**Fee Reduction (No change)**
Project Design: Solar PV, LEED certification, public access easement (creeks, streets, pedestrian paths, etc.), substantial over-planting of trees, significant creek restoration and/or public access, and similar design elements.	80% cost recovery rather than 100% on Planning Permits
Downtown Businesses: Planning Applications made by downtown businesses (DZC area) – new business or expansion of existing business	80% cost recovery rather than 100% on Planning Permits
Industrial/Light Manufacturing: Planning Applications for industrial or light manufacturing businesses.	80% cost recovery rather than 100% on Planning Permits
Public Art: Locally inspired publicly "accessible" art included as prominent component in project	80% cost recovery rather than 100% on Planning Permits

Community gardens, outdoor dining, live entertainment, sidewalk cafés and tasting rooms.	No Planning Permit or Fees required – must comply with specific standards
Energy and Water Conservation: Installation of significant energy or water conservation fixtures, appliances or equipment beyond green building code requirements	80% cost recovery rather than 100% on Planning Permits
Affordable Housing Projects:	80% deposit and 80% cost recovery rather than 100% on Planning Permits
Special Needs Housing Projects:	60% deposit and 60% cost recovery rather than 100% on Planning Permits

14. The City Council conducted a duly noticed public hearing on February 21, 2024, to discuss and receive public comments on the proposed fees.

NOW, THEREFORE, BE IT RESOLVED that the City Council hereby adopts the updated fee schedule for planning and building permits and services of the Community Development Department, as listed on the attached Exhibit A.

PASSED AND ADOPTED this 21st day of February, 2024, by the following roll call vote:

AYES: Councilmembers Rodin, Orozco, Sher, Crane, and Mayor Dueñas
NOES: None
ABSTAIN: None
ABSENT: None

Josefina Dueñas, Mayor

ATTEST:

Kristine Lawler, City Clerk

Fee Reductions / Discounts Table

The following fee reductions and discounts shall be applied to all new planning related applications, per the associated application type.

Description of Application Types Qualifying for Fee Reduction/Discount	Amount of Fee Reduction/Discount
Project Design: Solar PV, LEED certification, public access easement (creeks, streets, pedestrian paths, etc.), substantial over-planting of trees, significant creek restoration and/or public access, and similar design elements.	80% cost recovery rather than 100% on Planning Permits
Downtown Businesses: Planning Applications made by downtown businesses (DZC area) – new business or expansion of existing business	80% cost recovery rather than 100% on Planning Permits
Industrial/Light Manufacturing: Planning Applications for industrial or light manufacturing businesses.	80% cost recovery rather than 100% on Planning Permits
Public Art: Locally inspired publicly "accessible" art included as prominent component in project	80% cost recovery rather than 100% on Planning Permits
Community gardens, outdoor dining, live entertainment, sidewalk cafés and tasting rooms.	No Planning Permit or Fees required – must comply with specific standards
Energy and Water Conservation: Installation of significant energy or water conservation fixtures, appliances or equipment beyond green building code requirements.	80% cost recovery rather than 100% on Planning Permits
Affordable Housing Projects: Projects restricting 100% of units to qualifying tenants and homeowners with incomes of no more than 80% of Mendocino County Area Median Income.	80% deposit and 80% cost recovery rather than 100% on Planning Permits
Special Needs Housing Projects: Projects involving permanent supportive rental housing for special needs individuals, such as individuals experiencing homelessness and/or with mental illness.	60% deposit and 60% cost recovery rather than 100% on Planning Permits

Agenda Item No: 12.a.

MEETING DATE/TIME: 2/21/2024

ITEM NO: 2024-1518

City of Ukiah

AGENDA SUMMARY REPORT

SUBJECT: Consideration and Possible Adoption of a Resolution Amending the Fee Schedule for the Planning and Building Divisions of the Community Development Department.

DEPARTMENT: Community Development

PREPARED BY: Craig Schlatter, Community Development Director

PRESENTER: Craig Schlatter, Community Development Director

ATTACHMENTS:

1. 2023 Fee Comparisons with other Jurisdictions
2. Cost of Services Analysis Planning Building 2024
3. Planning-Services-Fees-2023_Final
4. 2024 Resolution Planning and Building Fees
5. 12a Presentation given at Meeting

Summary: Council will consider and possibly adopt a resolution amending the Fee Schedule for the Planning and Building Divisions of the Community Development Department.

Background: The Community Development Department currently consists of the Divisions of Planning, Building, Housing, Code Enforcement, Fire Prevention, Grants Management, and Business Licensing. Below is a brief background of the Department and how the Divisions of Planning and Building fund a portion of expenses through fees.

Background on Structural Changes to the Department: 2017-2023

Prior to 2017, the Community Development Department had historically consisted of the Divisions of Planning and Building. In December 2017, after approving the creation of a new Housing Division for the Department a couple months earlier, Council approved a plan for the major restructuring of the Department. Along with the renaming of the Department from "Community Development and Planning" to "Community Development," the restructuring was undertaken to fully integrate the Divisions of the Department- at that time the Planning, Building, and Housing Divisions- and enhance service delivery.

Over the last six and a half years, the Divisions of Code Enforcement (2020), Grants Management (2021), Fire Prevention (2022), and Business Licensing (2023) were added to the Department to further enhance this service delivery approach and bring development-related services "under one roof." Team members in each Division are cross-trained in the basic duties of the other six Divisions to eliminate silos and to emphasize the team approach to the services of the Department.

This integrated service delivery model has proven effective, enabling streamlined processing of planning and building applications, as well as improving the Department's responsiveness to customers and creating opportunities for additional customer education and improved communication. The embracing and deployment of this model by Community Development Department Staff has also, at least in part, resulted in the facilitation of additional housing units citywide and the City's earning of the ProHousing Designation.

As the Department has brought more development-related services under one roof, its overall fiscal impact to

the General Fund has also been reduced. The success of the Housing and Grants Management Divisions in securing grants and building up new programs and resources has also brought in additional revenue to offset costs, both within the Department and citywide. Although the number of staff has increased in the Department from 6 Full Time Employees (FTEs) in 2017 to 10 FTEs in 2023, because of the additional divisions and services added, multiple team members perform multiple services, spreading out costs. In comparing staffing within the planning and building divisions of 2024 to 2017, for example, the number of staff assigned primarily to those divisions has been reduced from 6 FTEs in 2017 to 5 FTEs in 2024. In this instance, Staff really is doing more with less.

Past updates to the Fee Schedule were completed by Council to the two cost recovery divisions of the Department, Planning and Building. See below for a summary.

2017 - 2023 Fee Schedule Changes to Planning and Building Divisions

- December 2017 - increase to the minimum building permit fee (note: building permit fees had not been adjusted since 2003). Council directed this building permit fee increase be an incremental first step towards a more comprehensive update to be undertaken in 2018. No changes to fees of Planning Division (note: Planning Division fees were comprehensively updated in 2016 but prior had not been updated since 2007).
- December 2018 - new building permit fee for temporary structures and second part of two-part building permit fee increase directed in 2017. No changes to fees of the Planning Division.
- January 2020 (public hearing continued from December 2019) - for the Building Division, amendments to building permit and MEP fees, plus new cost recovery hourly rate for building division, "red tag" violation fee increase, and adjustments to be in compliance with AB 1414 related to the solar permit fee. For the Planning Division, increases in the flat fee rate for minor planning permits, Director Determination, and appeals plus elimination of the Mendocino County Airport Land Use Commission referral fee, adjustments to align fees for environmental document filing with the California Department of Fish and Wildlife published rates, and increasing the fee for public appeals.

At the January 2020 meeting, Council directed Staff to undertake the next comprehensive fee review and update in five years, or by December 31, 2025, and that a CPI percentage adjustment be applied to select fees for each of the years from 2021 to 2025. Council also directed that Staff provide annual status reports to Council as to the continued appropriateness of adopted fees.

Discussion: Staff completed one of the directed CPI adjustments to the Department's hourly rate, increasing the rate from $105/hour to $116/hour but did not complete the CPI adjustments for 2022 or 2023. In July 2023, the City Manager directed Staff to analyze costs and revenues within the Planning and Building Divisions and make recommendations. A City Council Ad Hoc Committee, consisting of Councilmembers Crane and Orozco, was appointed by the Council in December 2023 to provide input on possible changes.

Fee Schedule Analysis Methodology

As a part of this analysis and to make recommendations, Staff utilized the following:

1. Deployment of a study to analyze the Chief Planning Manager and (former) Planning Manager's time, over an approximately three and a half month period, spent on eight different non-cost recovery activities- community zoning inquiries, developer zoning inquiries, building permit plan checks, major City-led projects, and General Plan implementation activities. The study also tracked time spent on flat fee minor site development permits and minor use permits, both level 1 and level 2.

2. Review of final costs of major site development permits and major use permits in 2022 and 2023.

3. Comparison of the Planning Division's fees to other planning divisions of jurisdictions within an approximately 100-mile radius of Ukiah (Attachment 1).

4. Cost of Services Analysis utilizing fully burdened hourly rate from the City Finance Director to calculate the actual City staff costs on select permits (Attachment 2).

5. Input from the Community Development Department Fee Schedule City Council Ad Hoc Committee.

Conclusions and Recommendations

A summary of conclusions and recommendations is below. For details, please see Attachment 3 for the Cost of Services Analysis.

Conclusion #1: Planners spent over 40% of their time on community and developer zoning inquiries not subject to cost recovery. This involved time spent at the public counter, as well as responding to questions via email and phone related to the zoning code. Although data was not tracked as to the exact nature of the inquiries, historically these types of inquiries involve basic questions about the code and often do not lead to the submittal of a project application. Planners also spent nearly 5% of their time on building permit plan checks.

Recommendation: The Department has already instituted changes in procedure to address this issue and will annually monitor to ensure the changes are effective. No additional action from Council is recommended.

Conclusion #2: Staff time costs on the processing of "Level 1" minor use permits, minor site development permits, and minor variances, including the cost of public noticing, was estimated at $949. The current flat fee is $500. Staff time costs in the processing of "Level 2" minor permits was estimated within the range of $1,387-$2,344, including the cost of public noticing, and the current flat fee is $900. The majority of minor permits processed by the Planning Division are level 2 minor permits.

Recommendation: Eliminate "Level 1" and "Level 2" minor permits, instead having one minor permit type. Increase the amount of the flat fee for the new minor permits from $900 to $1,000.

Additionally, Staff is recommending Council either appoint an ad hoc or continue the work of the existing Fee Schedule Ad Hoc to explore the creation of a streamlined “ministerial” permit. Although such a permit would be envisioned to, at the minimum, take the place of former “level 1” minor permits, Staff is interested in exploring further zoning code streamlining with the ad hoc.

Conclusion #3: In 2022 and 2023, final costs on Major Site Development Permits and Major Use Permits ranged from $5,000 to $22,000, with the cost for the majority of projects between $3,000 and $8,000. Costs for other “Major” planning permits such as annexations were similar.

Recommendation: Establish one initial deposit of $3,000 for all Major projects, subject to 100% cost recovery.

Additionally, Staff recommends Council eliminate the Department-wide hourly rate for cost recovery, instead basing the hourly rate upon the “fully burdened” hourly rate per staff position. Such rates would be updated each year within the Master Fee Schedule or as position rates change and included within the Department’s published Fee Schedule.

Conclusion #4: Staff time costs for Boundary Line Adjustments, Lot Mergers, Pre-Application Conference and Review, and Director Determinations are misaligned with the fees for such services.

Recommendation: For Boundary Line Adjustments (BLAs) and Lot Mergers for non-residentially zoned parcels, Staff recommends an increase from a flat fee of $350 to a $500 flat fee. For Pre-Application Conferences/Reviews of more than one hour's worth of time, Staff recommends an increase from $200 (cost recovery) to $500 (cost recovery); and for Director Determinations, Staff recommends an increase from a $300 flat fee to a $500 flat fee.

Staff additionally recommends that for BLAs and Mergers undertaken on residentially-zoned parcels, the rates

for such applications remain unchanged at $350. This results in a reduced fee to incentivize the production of infill housing, in alignment with Housing Element Implementing Program 2g: *Facilitate the consolidation of smaller, multi-family parcels by providing technical assistance to property owners and developers in support of lot consolidation*; and 3c: *Explore other policies and regulations that facilitate new infill housing development.*

Conclusion #5: Building Services Division fees are still adequate and appropriate for existing services, except the Department-wide hourly rate for cost recovery applications.

Recommendation: As noted above, Staff recommends eliminating the Department-wide hourly rate for cost recovery applications, instead basing the hourly rate upon the "fully burdened" hourly rate per staff position. With this exception, Staff recommends no other changes to the fees within the Building Services Division.

Other Recommendations
In addition to the proposed recommendations in this staff report, the Council Ad Hoc had input that Staff would like to incorporate into two additional recommendations. Specifically:

1. Staff to revise the layout of the online fee schedule posted on the webpage of the Planning Division and available at the front counter (Attachment 3) such that terms are well-explained and the information is easier to access/understand; and

2. Staff to do further research and analysis into the existing fee reduction categories (see the table within the Fee Schedule Resolution in Attachment 4, under #13) and present a report to Council with recommendations on those fee reductions. Such report would be produced for Council review within four months, or by June 30, 2024.

To move forward these recommendations, Staff recommends Council adopt the Resolution in Attachment 4 amending the Fee Schedule for the Planning and Building Divisions of the Community Development Department. Staff additionally recommends Council direct the aforementioned "Other Recommendations."

Recommended Action: Adopt Resolution amending the Fee Schedule for the Planning and Building Divisions of the Community Development Department.

BUDGET AMENDMENT REQUIRED: No

CURRENT BUDGET AMOUNT: N/A

PROPOSED BUDGET AMOUNT: N/A

FINANCING SOURCE: N/A

PREVIOUS CONTRACT/PURCHASE ORDER NO.: N/A

COORDINATED WITH: Fee Schedule Ad Hoc; Daniel Buffalo, Finance Director

DIVERSITY-EQUITY INITIATIVES (DEI): N/A

CLIMATE INITIATIVES (CI): N/A

GENERAL PLAN ELEMENTS (GP): N/A

Approved:
Sage Sangiacomo, City Manager

Agenda Item No: 13.b.

MEETING DATE/TIME: 5/15/2024

ITEM NO: 2024-162

City of Ukiah

AGENDA SUMMARY REPORT

SUBJECT: Receive Report and Recommendations Regarding Research into the Existing Fee Discount Categories of Select Services of the Planning Division of the Community Development Department, and Provide Direction as Necessary to Staff.

DEPARTMENT: Community Development

PREPARED BY: Craig Schlatter, Community Development Director

PRESENTER: Craig Schlatter, Community Development Director

ATTACHMENTS:

1. 2024 Fees for Planning Permits and Related Services
2. 2024 Planning Permits Fee Schedule Supplement
3. Planning Division Fee Schedule Discounts Report May 2024
4. Fee Reductions-Discounts Table 2-21-24
5. 13b Slide presentation given at meeting

Summary: Council will receive a report and recommendations regarding research into the existing fee discount categories of select services of the Planning Division of the Community Development Department, and provide direction to Staff.

Background: On February 21, 2024, City Council adopted Resolution No. 2024-05, establishing updated fees for the Planning and Building divisions of the Community Development Department (CDD). As part of the staff report prepared for the item, and in response to input received from the Fee Schedule (now, the Zoning Reform) Ad Hoc, Staff made two additional recommendations that were directed by Council. Specifically:

1. Staff to revise the layout of the online fee schedule posted on the webpage of the Planning Division and available at the front counter such that terms are well-explained and the information is easier to access/understand; and

2. Staff to do further research and analysis into the existing fee reduction categories and present a report to Council with recommendations on those fee reductions. Such report would be produced for Council review within four months, or by June 30, 2024.

Staff revised the layout of the online fee schedule posted on the webpage of the Planning Division (https://cityofukiah.com/community-development/planning-services/) and available at the front counter (Attachment 1). To ensure terms are well-explained and the information easier to access/understand, Staff also developed a new supplement (Attachment 2) to the Planning Division's fee schedule, which is also accessible online and at the front counter of the Community Development Department.

With Task 1 completed, the purpose of this staff report is to present a report and recommendations regarding Task 2- research into the existing fee discount categories of select services of the Planning Division.

Discussion: To complete research into the origin of the existing fee discount categories of select services of the Planning Division and arrive at recommendations, Staff reviewed staff reports and agenda packets dating back to 2002 and planning permit applications dating back to 2016. A complete report containing details of this

research is included as Attachment 3. A list of the existing fee schedule discounts is included as Attachment 4. Below are conclusions and recommendations.

Conclusions

1. Based on the research and analysis in this report, Staff finds no evidence that the fee discounts incentivized development of the types of projects originally envisioned. Developers have commented throughout the last seven years that they are primarily seeking certainty in the entitlement process, rather than reduced fees.

2. Planning approaches such as "performance zoning," where a city or county adopts an administrative approval process for certain uses that meet objective performance standards, may prove more effective in incentivizing the types of projects first envisioned within the 2016 fee schedule.

3. Current State laws, such as the California Building Code, mandate such energy conservation and solar measures listed on the 2016 fee schedule. Where not mandated by State law, the City has integrated many of the Project Design and Energy and Water Conservation features into the Objective Design and Development Standards for new housing projects. The same types of standards could be designed for commercial projects.

Recommendations

Staff recommends Council provide direction to Staff on how to proceed. Below are proposed recommendations, based on the conclusions reached in this report, for Council's consideration.

1. Direct Staff and the Zoning Reform Ad Hoc to explore the development of a new Administrative Use Permit (AUP) and/or make additional recommendations on how to streamline entitlement processes. After preliminary discussions with the Zoning Reform Ad Hoc, at the minimum AUPs may be appropriate for former "level 1" minor permit types, as well as public art, community gardens, outdoor dining, live entertainment, sidewalk cafes, and tasting rooms.

2. Direct Staff to bring back an amendment to the existing fee schedule at a future Council meeting to remove fee discounts and/or make additional changes to fees for AUPs and other planning permits.

Staff believes the above two tasks can be completed within three months, or by August 1, 2024.

Recommended Action: Receive a report and recommendations regarding research into the existing fee discount categories of select services of the Planning Division of the Community Development Department, and provide direction to Staff.

BUDGET AMENDMENT REQUIRED: N/A

CURRENT BUDGET AMOUNT: N/A

PROPOSED BUDGET AMOUNT: N/A

FINANCING SOURCE: N/A

PREVIOUS CONTRACT/PURCHASE ORDER NO.: N/A

COORDINATED WITH: Zoning Reform Ad Hoc; Jesse Davis, Chief Planning Manager

DIVERSITY-EQUITY INITIATIVES (DEI): N/A

CLIMATE INITIATIVES (CI): N/A

GENERAL PLAN ELEMENTS (GP): N/A

Approved:
Sage Sangiacomo, City Manager

City of Ukiah
COMMUNITY DEVELOPMENT DEPARTMENT

Planning Division Fee Schedule Discounts Historical Research and Analysis Report May 2024

Overview

Research was conducted by City Staff into the origin of Community Development Department Planning Division fee discounts in place as of the date of the last adoption of the Fee Schedule in February 2024 (Resolution No. 2024-05). The report below provides details of this research, as well as conclusions.

Summary of Research into Historical Documents

1. Fees for planning and zoning activities were modified a total of six times between 1964 and 2002, but per an April 20, 2005, staff report prepared by former Planning and Community Development Director Charley Stump, 2002 appears to be the first year in which both cost recovery and fee discounts were implemented. "The purpose of raising the fees in 2002 was to maintain an approximate 75% salary cost recovery for processing the planning and zoning permit applications. Director Stump further noted “The City Council at that time felt comfortable providing a 25% subsidy to the development community to "assist" economic development."

   Director Stump's assertion that the 2002 City Council sought to utilize a 25% subsidy to assist (incentivize) economic development is validated by a review of Resolution No. 2002-41, adopted June 19, 2002. In addition to the subsidy for economic development, through Recital #10 the Resolution also established the first instance of discounted fees- in this case for affordable and special needs housing projects.

   Recital 10- The City desires to provide an incentive to affordable housing projects by not increasing the current fees for projects involving 100% of the housing units to be "locked-in" affordable to citizens earning less than 80% of the area median income, "sweat-equity" residential projects, residential second units, and projects involving housing for identified groups in need such as seniors, homeless persons, and the mentally ill.

2. The practice of fully recovering the costs of certain major planning permits, known as Cost Recovery, was first implemented by the City on June 1, 2005, through the Council’s adoption of Resolution No. 2005-47. Prior to that date, all applications were processed as "Level 1" or "Level 2" permits subject to a "flat rate" fee approach.

   A Cost Recovery Study undertaken to make recommendations to the Council for the 2005 fee schedule update indicated that the fees collected for the processing of planning permits

ranged from 4.7% to 17% of the cost of processing the permits. In other words, the Cost Recovery Study found that prior to adoption of the Cost Recovery practice, the City was subsidizing 83% – 95.3% of the total cost for major planning permit development projects.

Because adoption of Resolution No. 2005-47 resulted in major planning permits being subject to full cost recovery, the 25% subsidy for economic development was in effect discontinued. However, the Resolution did prescribe a new 20% discount for affordable housing projects and a 40% discount for special needs housing projects, as depicted in Recitals #14 and #15:

Recital 14- The City desires to maintain low fees (80% cost recovery) for affordable housing projects (projects that are "locked-in" affordable to citizens earning less than 80% of the area median income, "sweat-equity" residential projects, and residential second units).

Recital 15- The City desires to maintain low fees (60% cost recovery) for projects involving housing for identified groups in need such as seniors, homeless persons, and the mentally ill.

3. No additional fee discounts were adopted in 2007 through Resolution No. 2007-11, which was the last adopted fee schedule for the planning division until 2016. The 2007 Resolution continued the aforementioned affordable housing and special needs fee discounts.

4. The origin of the remaining six fee discounts dates back to an April 20, 2016, staff report prepared for the Council by Director Stump. The staff report proposed fee reductions as "incentives" to encourage "...projects that provide significant economic development, new industrial/manufacturing development, significant energy conservation, and certain public benefits." (Director Stump, 4/20/16 staff report)

   This is also when the fee discount table was first introduced by Staff. In the April 20, 2016, staff report, the table is described as "Preliminary Fee Reductions to Promote Economic Development, Energy Conservation and Public Benefits" and the description is that "Staff has developed a number of potential fee reductions to promote local economic development and energy conservation and to incentivize projects that provide public benefits."

   On June 1, 2016, Council adopted Resolution No. 2016-30, approving Staff's recommendations for fee discounts. The fee discount table within the resolution is shown in Figure 1 below. The description of the purpose of the fee discounts is described within Recital 13 of Resolution No. 2016-30:

   Recital 13: The City has determined that fee reductions for projects that promote/provide economic development, energy conservation and public benefits is reasonable and appropriate.

5. Fee discounts first adopted in June 2016 have been continued within all subsequently adopted fee schedules, for the years 2017, 2018, 2020, and 2024.

Figure 1: Fee Reductions Table per Resolution No. 2016-30, adopted June 1, 2016

Economic Development Energy Conservation Public Benefit Components	Fee Reduction
Project Design: Solar PV, LEED certification, public access easement (creeks, streets, pedestrian paths, etc.), substantial over-planting of trees, significant creek restoration and/or public access, and similar design elements.	80% cost recovery rather than 100% on Planning Permits
Downtown Businesses: Planning Applications made by downtown businesses (DZC area) – new business or expansion of existing business	80% cost recovery rather than 100% on Planning Permits
Industrial/Light Manufacturing: Planning Applications for industrial or light manufacturing businesses.	80% cost recovery rather than 100% on Planning Permits
Public Art: Locally inspired publicly "accessible" art included as prominent component in project	80% cost recovery rather than 100% on Planning Permits
Community gardens, outdoor dining, live entertainment, sidewalk cafés and tasting rooms.	No Planning Permit or Fees required – must comply with specific standards
Energy and Water Conservation: Installation of significant energy or water conservation fixtures, appliances or equipment beyond green building code requirements.	80% cost recovery rather than 100% on Planning Permits
Affordable Housing Projects: Projects restricting 100% of units to qualifying tenants and homeowners with incomes of no more than 80% of Mendocino County Area Median Income.	80% deposit and 80% cost recovery rather than 100% on Planning Permits
Special Needs Housing Projects: Projects involving permanent supportive rental housing for special needs individuals, such as individuals experiencing homelessness and/or with mental illness.	60% deposit and 60% cost recovery rather than 100% on Planning Permits

Analysis

There are different approaches to incentivizing certain types of development. Some jurisdictions opt for reducing fees. Others seek to add certainty into the zoning and permitting process, including streamlining of permits and processes. Although the first approach of reducing fees can be easier for Planning and Community Development Departments to implement, involving little if any changes to zoning or processes, Staff was unable to find clear data or studies demonstrating that a fee reduction alone incentivized development.

Rather, it appears that if fees are set at rates that are "excessive," or above regional market rates for fees, they can act as barriers to development.

Related to housing development, for example, a book written by Shawn Phillips in 2020, *The Affordable City- Strategies for Putting Housing Within Reach (and Keeping it There)*, recommends cities implement such strategies as "Strive for Objective, Consistent Rules," (Chapter 12), "Increase Zoning Capacity" (Chapter 15), "Upzone Many Places at Once" (Chapter 16), "Allow Housing in Commercial Zones" (Chapter 19), "Make Development Approvals By Right" (Chapter 24), and "Speed up the Entitlement Process" (Chapter 25).

Indeed, the City has enacted many of these recommended strategies through accelerated implementation of the 2017 Housing Strategy and 2019-2027 Housing Element, facilitating the greatest number of new housing units constructed over a five-year period than at any point in the City's history, as well as the City's earning of HCD's coveted ProHousing designation.

Comparisons of Planning Division Application Data Since June 1, 2016
To analyze the impact the eight fee discounts had on incentivizing economic development, energy conservation, and public benefit-producing projects, Staff reviewed the number of new planning applications received, by year, since the adoption of Resolution No. 2016-30 for each of the eight categories. This data was then compared to the total number of all applications received for each year to understand if any causal relationship may be present.

- 6/1/16-12/31/16: one (1) application received for fee discount category out of total of 18 applications.
- Calendar Year (CY) 2017: four (4) applications received for fee discount categories out of total of 29 applications.
- CY 2018: one (1) application received for fee discount category out of total of 38.
- CY 2019: one (1) application received for fee discount category out of total of 27.
- CY 2020: zero (0) applications received for fee discount categories out of total of 19.
- CY 2021: four (4) applications received for fee discount categories out of total of 30.
- CY 2022: three (3) applications received for fee discount categories out of total of 24.
- CY 2023: one (1) application received for fee discount category out of total of 11.
- 1/1/24-4/30/24: one (1) application received for fee discount category out of total of 9.

Additional Statistics of Note
- For all years, 2016-2024, zero (0) applications were received for the categories of Project Design or Industrial/Light Manufacturing.
- Two (2) applications were submitted within the Energy and Water Conservation Design category, and both of these were for housing projects submitted in 2017.
- Of the seven (7) applications for businesses within the Downtown during the period, only one was for a new construction project.
- By a nearly two-to-one margin, the most frequently submitted application type for 2016-2024 was the minor use permit, which is not subject to cost recovery or fee discounts.

Conclusions

1. Based on the research and analysis in this report, Staff finds no evidence that the fee discounts incentivized development of the types of projects originally envisioned. Developers have commented throughout the last seven years that they are primarily seeking certainty in the entitlement process, rather than reduced fees.

2. Planning approaches such as "performance zoning," where a city or county adopts an administrative approval process for certain uses that meet objective performance standards, may prove more effective in incentivizing the types of projects first envisioned within the 2016 fee schedule.

   Although not yet studied in-depth by Staff, performance zoning and other types of “dynamic zoning” could incentivize economic development efforts, particularly within the downtown. Performance zoning may still result in cost savings to applicants (in no longer needing discretionary review) while potentially enabling speedier implementation of many of the City's General Plan goals, particularly in the areas of land use, housing, economic development, and local agriculture. This approach could also provide an alternative to the time-intensive and often costly comprehensive zoning code update, as impactful General Plan land use implementation programs could be made incrementally.

   The success of the zoning code amendment adopted by Council in 2021 to allow new housing construction by right in commercial and residential zoning districts, provided the project meets the City's Objective Design and Development Standards, is a good example of performance zoning. The first such by-right housing project in Ukiah, Acorn Valley Plaza, was through the City's objective design standards review process and issued a building permit within two months of submittal of the building permit application. With two other multi-unit housing projects currently in the pipeline, this approach is proving effective for facilitating new housing.

3. Current State laws such as the California Building Code mandate such energy conservation and solar measures envisioned within the 2016 fee schedule. Where not mandated by State law, the City has integrated many of the Project Design and Energy and Water Conservation features into the Objective Design and Development Standards for new housing projects. The same types of standards could be designed for commercial projects.

City of Ukiah
COMMUNITY DEVELOPMENT DEPARTMENT

(Select) Planning Services Fees Comparison
City of Ukiah and County of Mendocino

Fee Description	City of Ukiah Fee	County of Mendocino Fee
Major Use Permit	$3,000 Deposit/Cost Recovery[1]	$7,128 + (staff time x weighted rate)[2]
Major Use Permit – Amendment	$3,000 Deposit/Cost Recovery	$5,604 + (staff time x weighted rate)
Boundary Line Adjustment	$500 Flat Fee[3]	$1,278 + (staff time x weighted rate)
Rezone	$3,000 Deposit/Cost Recovery	$7,687 + (staff time x weighted rate)
General Plan Amendment	$3,000 Deposit/Cost Recovery	$10,348 + (staff time x weighted rate)
Major Subdivision	$3,000 Deposit/Cost Recovery	$11,568 + (staff time x weighted rate)
Minor Subdivision	$1,000 Flat Fee	$6,393 + (staff time x weighted rate)
Variance	$3,000 Deposit/Cost Recovery for Major Variances $1,000 Flat Fee for minor variances	$3,031 + (staff time x weighted rate) (No distinction between major or minor variances.)

[1] The applicant makes an initial deposit and staff bills at the weighted hourly rate per position. If there are unused funds after project approval, denial, or withdrawal, unspent deposit funds are refunded by the City to the applicant.
[2] The applicant makes a non-refundable deposit and then is billed additionally by the County at the weighted hourly rate.
[3] The applicant pays a one-time, non-refundable fee of $500.

RESOLUTION NO. 2025-__

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF UKIAH AMENDING THE FEE SCHEDULE OF THE PLANNING AND BUILDING SERVICES DIVISIONS OF THE DEPARTMENT OF COMMUNITY DEVELOPMENT TO ELIMINATE FEE DISCOUNTS FOR SELECT USES AND ESTABLISH A NEW FEE FOR THE ADMINISTRATIVE USE PERMIT

WHEREAS:

1. Community Development Department ("Department") Planning and Building Permit service fees were last updated on May 21, 2025, through Resolution No. 2025-25; and

2. The City Council appointed a Community Development Department Fee Schedule Ad Hoc Committee comprised of Councilmembers Crane and Orozco to provide input and recommendations in the updating of the Department's Fee Schedule; and

3. As directed by the City Council, the Department conducted a Historical Research and Analysis Report ("Report") in May 2024 for the Planning Division Fee Schedule Discounts within the 2024 Fee Schedule; and

4. Among other conclusions, the Report found no evidence that the fee discounts incentivized development of the types of projects originally envisioned; and

5. Because of the conclusions reached within the Report, the City has determined that a fee reduction for projects that promote/provide economic development, affordable and special needs housing, energy conservation and public benefits is no longer reasonable or appropriate; and

6. On August 20, 2025, the City Council unanimously introduced an ordinance establishing an Administrative Use Permit for certain uses; and

7. Due to the estimated costs for the processing and approval or denial of administrative use permits, it is reasonable and appropriate to set a flat fee for this permit at $350; and

8. A public notice was posted in the Ukiah Daily Journal on August 23, 2025 to notify the public of the possible changes to the Fee Schedule and give the public an opportunity to make their comments known; and

9. The City Council conducted a duly noticed public hearing on September 3, 2025, to discuss and receive public comments on proposed changes to the Fee Schedule.

NOW, THEREFORE, BE IT RESOLVED that the City Council hereby adopts the updated fee schedule for planning and building permits and services of the Community Development Department, as listed on the attached Exhibit A.

PASSED AND ADOPTED this____day of September, 2025, by the following roll call vote:

AYES:
NOES:
ABSTAIN:
ABSENT:

Douglas F. Crane, Mayor

DRAFT

ATTEST:

Kristine Lawler, City Clerk

DRAFT

EXHIBIT A
Permits and Services for the Planning and Building Services Divisions
Fee Resolution

Planning Services Fees

PERMIT APPLICATION OR SERVICE	CURRENT FEE	NEW FEE
Staff Hourly Rate	Fully burdened hourly rate, inclusive of salary and benefits for each position and overhead costs. Overhead includes the at-cost charge for direct costs and a percentage of City costs according to the most recently adopted Cost Allocation Plan	No change
Site Development Permit Major	$3,000.00 deposit and full cost recovery at the fully burdened hourly rate per position Affordable Housing Project: $2,400.00 and 80% cost recovery at the fully burdened hourly rate per position Special Needs Housing Project: $1,800 and 60% cost recovery at the fully burdened hourly rate per position	$3,000.00 deposit and full cost recovery at the fully burdened hourly rate per position.
Site Development Permit Minor	$1,000 Flat Fee	No change
Use Permit Major	$3,000.00 deposit and full cost recovery at the fully burdened hourly rate per position Affordable Housing Project: $2,400.00 and 80% cost recovery at the fully burdened hourly rate per position Special Needs Housing Project: $1,800 and 60% cost recovery at the fully burdened hourly rate per position	$3,000.00 deposit and full cost recovery at the fully burdened hourly rate per position
Cannabis Related Business Use Permit Renewal	$1,000.00 deposit and subject to 100% cost recovery at the fully burdened hourly rate per position	No change
Use Permit Minor	$1,000 Flat Fee	No change
Use Permit Site Development Permit Amendment	Minor Amendment: $1,000 Flat Fee Major Amendment: $3,000.00 deposit and full cost recovery at the fully burdened hourly rate per position	No change

DRAFT

PERMIT APPLICATION OR SERVICE	CURRENT FEE	NEW FEE
Variance Major (seeking more than 50% relief from the Code)	$3,000.00 deposit and full cost recovery at the fully burdened hourly rate per position Affordable Housing Project: $2,400.00 and 80% cost recovery at the fully burdened hourly rate per position Special Needs Housing Project: $1,800 and 60% cost recovery at the fully burdened hourly rate per position	$3,000.00 deposit and full cost recovery at the fully burdened hourly rate per position
Variance Minor (seeking less than 50% relief from the Code)	$1,000 Flat Fee	No change
Subdivision Major	$3,000.00 deposit and full cost recovery at the fully burdened hourly rate per position Affordable Housing Project: $2,400.00 and 80% cost recovery at the fully burdened hourly rate per position Special Needs Housing Project: $1,800 and 60% cost recovery at the fully burdened hourly rate per position	$3,000.00 deposit and full cost recovery at the fully burdened hourly rate per position
Subdivision Minor	$1,000 Flat Fee Affordable Housing Project: $800 Flat Fee Special Needs Housing Project: $600 Flat Fee	$1,000 Flat Fee
Subdivision Exception (Minor Subdivisions)	$500.00 Flat Fee Affordable Housing Project: $400 Flat Fee Special Needs Housing Project: $200 Flat Fee	$500 Flat Fee
Boundary Line Adjustment Residentially Zoned Parcel(s)	$350 Flat Fee Affordable Housing Project: $260 Flat Fee Special Needs Housing Project: $170 Flat Fee	$350 Flat Fee
Boundary Line Adjustment Non-Residentially Zoned Parcel(s)	$500 Flat Fee	No change
Lot Merger Residentially Zoned Parcel(s)	$350 Flat Fee Affordable Housing Project: $260 Flat Fee Special Needs Housing Project: $170 Flat Fee	$350 Flat Fee

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PERMIT APPLICATION OR SERVICE	CURRENT FEE	NEW FEE
Lot Merger Non-Residentially Zoned Parcel(s)	$500 Flat Fee	No change
Modification to Recorded Subdivision Map	$600.00 Flat Fee	No change
Subdivision/Parcel Map Time Extension	$200.00 Flat Fee	No change
Appeal	Project Applicant: $500 Deposit and full cost recovery billed at the fully burdened hourly rate per position Public: $500 Flat Fee	No change
General Plan Amendment	$3,000.00 deposit and full cost recovery at the fully burdened hourly rate per position	No change
Annexation	$3,000.00 deposit and full cost recovery at the fully burdened hourly rate per position	No change
Pre-zoning	$3,000.00 deposit and full cost recovery at the fully burdened hourly rate per position	No change
Rezoning	$3,000.00 deposit and full cost recovery at the fully burdened hourly rate per position	No change
Planned Development	$3,000.00 deposit and full cost recovery at the fully burdened hourly rate per position Affordable Housing Project: $2,400.00 and 80% cost recovery at the fully burdened hourly rate per position Special Needs Housing Project: $1,800 and 60% cost recovery at the fully burdened hourly rate per position	$3,000.00 deposit and full cost recovery at the fully burdened hourly rate per position
CEQA Document Filing Fee (fee subject to change based on County requirement)	$50 or current recording fee for CEQA document filing as posted by the Mendocino County Clerk-Recorder's Office	No change

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PERMIT APPLICATION OR SERVICE	CURRENT FEE	NEW FEE
CA Fish and Wildlife CEQA Fee (fee subject to increase based on State requirement)	CDFW Filing Fee: https://www.wildlife.ca.gov/conservation/CEQA/Fees (fee subject to increase every January 1st based on State requirement)	No change
CEQA Mitigation Monitoring	$200 Flat Fee	No change
Pre-Application Review and Zoning Research (Planning Division Staff)	Level 1: $0 Level 2: $200 Deposit and 100% cost recovery, billed at the fully burdened hourly rate per position	No change
Demolition Permit Historical Review	$350 Flat Fee	No change
Certificate of Compliance (to recognize existing parcels)	$300 Flat Fee	No change
Temporary Objects / Sidewalk Café Encroachment Permit	$95 Flat Fee (Planning Div. = $50; Public Works Dept. = $45)	No change
Pre-Development Review (Project Review Committee)	$250.00 Flat Fee	No change
Pre-Application Review (Planning Commission)	$300.00 deposit and 100% cost recovery, billed at the fully burdened hourly rate per position	No change
Environmental Impact Report (EIR), Special CEQA Document or Complex Initial Environmental Study	Full Consultant Cost plus 15% administration fee	No change
Archaeological Search – for Environmental Review	Full Cost – Paid directly to Sonoma State University Northwest Information Center	No change
Public Hearing Continuations requested by applicants that require re-noticing	$200.00 Flat Fee	No change
Penalty/Violation (proceeding without permit)	Double the cost of the permit	No change

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PERMIT APPLICATION OR SERVICE	CURRENT FEE	NEW FEE
Specific Plan/Master Plan Review	$3,000.00 deposit and full cost recovery at the fully burdened hourly rate per position Affordable Housing Project: $2,400.00 and 80% cost recovery at the fully burdened hourly rate per position Special Needs Housing Project: $1,800 and 60% cost recovery at the fully burdened hourly rate per position	$3,000.00 deposit and full cost recovery at the fully burdened hourly rate per position
Address Change	$100.00 Flat Fee	No change
Site Inspection Request by Property Owner/Applicant	$0.00	No change
Sign Permit	Minor: $50.00 Flat Fee (up to 1 hour of staff time) Major: $150.00 Flat Fee (more than 1 hour of staff time)	No change
Building Permit Planning Review Fee	$50 Flat Fee	No change
General Plan/Advance Planning Maintenance Fee	15% of the total cost of a Building Permit (Building Permit, Mechanical Permit, Electrical Permit, Plumbing Permit and Plan Check)	No change
Reproduction of the following: Document and Map Fees General Plan Zoning Ordinance Subdivision Ordinance Master Bike/Ped Plan Airport Master Plan Landscaping Guidelines Design Guidelines Creek Plans General Plan Map Zoning Map Other Plans (misc. maps, graphics, and reports)	 $30.00 $30.00 $30.00 $30.00 $30.00 $15.00 $15.00 $15.00 $30.00 $30.00 $5.00-$30.00 $5.00-$30.00	No change
Photocopying	$0.10 per page First 5 copies are provided at no cost	No change
Director's Determination (Determinations of Appropriate Use)	$500 Flat Fee	No change
Mural Permit	Private Property: $450 Flat Fee Public Property: No fee	No change
Violation / Penalty (Zoning Code)	Double the Cost of the Permit	No change
Administrative Use Permit	N/A (new permit)	$350 Flat Fee

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Building Services Fees

SERVICE	CURRENT FEE	NEW FEE
Mandatory Training and Certification Surcharge	4% on all Building Permits	No change
Technology and Records Management Surcharge	3% on all Building Permits	No change
Minimum Building Permit Temporary Certificate of Occupancy	Based on the project size and timeframe >$100,000 = $500.00/ 60 days <$100,000 = $1,000.00/ 60 days	No change
Request for Alternate Materials and Methods Review	$ 100% Cost Recovery, billed at the fully burdened hourly rate per position	No change
Appeal to Building Regulations Appeal Board	100% Cost Recovery, billed at the fully burdened hourly rate per position, 2-hour minimum	No change
Postage – Structural Plan Check	Actual Cost, billed at the fully burdened hourly rate per position	No change
New Outdoor Dining Permit	$250 ($120 Building Division; $130 Public Works Dept)	No change
Outdoor Dining Permit Renewal	$50	No change
Minimum Building Permit Fee for Temporary Structures	$225	No change
Minimum Building Permit Fee	$105	No change
Building Permit Review Fee for Discretionary Projects	$50	No change
Vacant and Abandoned Property Registration Fee	$150	No change
Vacant and Abandoned Property Annual Monitoring Fee	$500	No change

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Community Development Department - Building Division
Fees - Building Permits

COMMUNITY DEVELOPMENT DEPARTMENT
300 SEMINARY AVENUE
UKIAH, CA 95482

Building Fees				
1.00 -500.00	$ 105.00			
501.00 - 2,000.00	$ 105.00	for the first 500.00 plus	$ 4.75	for each additional 100.00 or fraction thereof, to and including 2,000.00
2,001.00 - 25,000.00	$ 107.62	for the first 2,000.00 plus	$ 21.76	for each additional 1,000.00 or fraction thereof, to and including 25,000.00
25,001.00 - 50,000.00	$ 608.78	for the first 25,000.00 plus	$ 15.69	for each additional 1,000.00 or fraction thereof, to and including 50,000.00
50,001.00 - 100,000.00	$ 1,000.38	for the first 50,000.00 plus	$ 10.88	for each additional 1,000.00 or fraction thereof, to and including 100,000.00
100,001.00 - 500,000.00	$ 1,545.04	for the first 100,000.00 plus	$ 8.55	for each additional 1,000.00 or fraction thereof, to and including 500,000.00
500,000.00 - 1,000,000.00	$ 5,025.24	for the first 500,000.00 plus	$ 7.38	for each additional 1,000.00 or fraction thereof, to and including 1,000,000.00
1,000,000.00 - And Up	$ 8,715.99	for the first 1,000,000.00 plus	$ 5.67	for each additional 1,000.00 or fraction thereof
Red Tagged work w/o permit		Permit fee plus 3 times permit fee.		
Other inspection fees				
Inspections outside of normal business hours			$ 105.00	* (mininum charge - Two hours)
Reinspection fees assessed under provisions of section 305.8			$ 105.00	*
Inspections for which no fee is specifically indicated			$ 105.00	*
Additional plan review requred by changes, additions or revisions to plans			$ 105.00	*
For use of outside consultants for plan checking and inspections, or both.			Cost	** Actual Cost

* Or the total hourly cost to the jurisdiction, whichever is the greatest.
This cost shall include supervision, overhead, equipment, hourly wages,
and fringe benefits of the employees involved.
** Actual cost includes administrative and overhead costs.

Community Development Department - Building Division Fees
Mechanical, Electrical, and Plumbing (MEP)

City of Ukiah

COMMUNITY DEVELOPMENT DEPARTMENT
300 SEMINARY AVENUE
UKIAH, CA 95482

Mechanical Permit Fees	**Fee**
For the issuance of each mechanical permit.	$ 105.00
For issuing each supplemental permit for which the original permit has not expired, been cancelled or finaled.	$ 12.88
Unit Fee Schedule	
Furnaces	
For the installation or relocation of each forced-air or gravity-type furnace or burner, including ducts and vents attached to such appliance, up to and including 100,000 Btu/h (29.3 KW)	$ 26.29
For the installation or relocation of each forced-air or gravity-type furnace or burner, including ducts and vents attached to such appliance, over 100,000 Btu/h (29.3 KW)	$ 32.32
For the installation or relocation of each floor furnace, including vent.	$ 26.29
For the installation or relocation of each suspended heater, recessed wall heater or floor-mounted unit heater.	$ 26.29
Appliance Vents	
For the installation, relocation or replacement of each appliance vent installed and not included in an appliance permit.	$ 12.88
Repairs or Additions	
For the repair of, alteration of, or additions to each heating appliance, refrigeration unit, cooling unit, absorption unit, or each heating, cooling, absorption or evaporative cooling system,	
including installation of controls regulated by the Mechanical Code.	$ 24.34
Broilers, Compressors and Absorption Systems	
For the installation or relocation of each boiler or compressor to and including 3 horsepower (10.6kw), or each absorption system to and including 100,00 Btu/h (29.3kw)	$ 26.11
For the installation or relocation of each boiler or compressor over 3 horsepower (10.6kw), to and including 15 horsepower (52.7kw) or each absorption system over 100,00 Btu/h (29.3kw)	
to and including 500,000 Btu/h (146.6kw)	$ 48.22
For the installation or relocation of each boiler or compressor over 15 horsepower (52.7kw), to and including 30 horsepower (105.5kw) or each absorption system over	
500,000 Btu/h (146.6kw) to and including 1,000,000 Btu/h (293.1kw)	$ 66.16
For the installation or relocation of each boiler or compressor over 30 horsepower (105.5kw), to and including 50 horsepower (176kw) or each absorption system over	
1,000,000 Btu/h (293.1kw) to and including 1,750,000 Btu/h (512.9kw)	$ 98.48
For the installation or relocation of each boiler or compressor over 50 horsepower (176kw), or each absorption system over 1,750,000 Btu/h (512.9kw)	$ 164.54
Air Handlers	
For each air-handling unit to and including 10,000 cubic feet per minute (cfm) (4719 L/s), including ducts attached thereto. Note: This fee does not apply to an air-handling unit which	$ 18.91
is a portion of a factory-assembled appliance, cooling unit, evaporative cooler or absorption unit for which a permit is required elsewhere in the Mechanical Code.	
For each air-handling unit over 10,000 (cfm) (4719 L/s)	$ 32.14
Evaporative Coolers	
For each evaporative cooler other than portable type.	$ 18.91
Ventilation and Exhaust	
For each ventilation fan connected to a single duct.	$ 12.88
For each ventilation system which is not a portion of any heating or air-conditioning system authorized by a permit.	$ 18.91
For the installation of each hood which is served by mechanicial exhaust, including the ducts for such hood.	$ 18.91
Incinerators	
For the installation or relocation of each domestic-type incinerator.	$ 32.32
For the installation or relocation of each commercial or industrial-type incinerator.	$ 25.76
Miscellaneous (Mechanical)	
For each appliance or piece of equipment regulated by the Mechanical Code but not classed in other appliance categories, or for which no other fee is listed in this code.	$ 18.91
Other Inspections and Fees (Mechanical)	
*Inspection outside of normal business hours, per hour (Minimum charge two hours)	$ 105.00
*Reinspection fees assessed under provisions of section 305.5, per inspection.	$ 105.00
*Inspection for which no fee is specifically indicated, per hour (Minimum charge one half hour)	$ 105.00
*Additional plan review required by changes, additions or revisions to plans or to plans which an initial review has been completed. (Minimum charge one half hour)	$ 105.00
*Or the total hourly cost to the jurisdiction, whichever is greatest. This cost shall include supervision, overhead, equipment, hourly wages and fringe benefits of the employees involved.	

Electrical Permit Fees	Fee
For the issuance of each electrical permit.	$ 105.00
For the issuance of each supplemental permit for witch the original permit has not expired, been cancelled, or finaled.	$ 12.88
System Fee Schedule (note: the following do not include permit issuing fee)	
New Residential Buildings	
The following fees shall include all wiring and electrical equipment in or on each building, or other electrical equipment on the same premises constructed at the same time.	
Multifamily - For new multifamily buildings (apartments and condominiums) having three or more dwelling units constructed at the same time, not incluing area of garages, carports,	
and accessory buildings, per square ft (0.09m2)	$ 0.96
Single and two family - For new Single and two family residential buildings constructed at the same time, not including area of garages, carports, and accessory buildings,	
per square ft (0.09m2)	$ 0.96
For other types of residential occupancies and for alteration, additions, and modifications to existing residential buildings, use the unit fee schedule.	
Private Swimming Pools	
For new private, in-ground swimming pools for single-family and multifamily occupancies, including a complete system of necessary branch circuit wiring, bonding, grounding, under-	
water lighting, water pumping and other similar electrical equipment directly related to the operation of a swimming pool, each pool.	$ 87.92
Carnivals and Circuses	
Carnivals, circuses, or other traveling shows or exhibitions utilizing transportable-type rides, booths, displays and attractions.	
For electric generators and electrically driven rides, each	$ 41.74
For mechanically driven rides and walk-though attractions or displays having electric lighting, each.	$ 12.88
For a system of area and booth lighting, each	$ 12.88
For permanently installed rides, booths, displays and attractions, use the Unit Fee Schedule.	
For a temporary service power pole or pedestal-mounted receptacle outlets and appurtenances, each	$ 41.74
For a temporary distribution system and temporary lighting and receptacle outlets for construction sites, decorative lights, Christmas tree sales lots, fireworks stands, etc. each	$ 21.84
UNIT FEE SCHEDULE	
(Note: The following does not include permit-issuing fee.)	
Receptacle, Switch and Lighting Outlets	
For receptacle, switch, light or other outlets at which current is used or controlled, except services, feeders and meters: First 20, each	$ 1.95
Additional fixtures, each	$ 1.30
Note: For multi-outlet assemblies, each 5 feet (1524 mm) or fraction thereof may be considered as one outlet.	
Lighting Fixtures	
For lighting fixtures, sockets or other lamp-holding devices:	
First 20 fixtures, each	$ 1.95
Additional fixtures, each	$ 1.30
For pole or platform-mounted lighting fixtures, each	$ 1.95
For theatrical-type lighting fixtures or assemblies, each	$ 1.95
Residential Appliances	
For fixed residential appliances or receptacle outlets for same, including wall-mounted electric ovens; counter-mounted cooking tops; electric ranges, self-contained	
room, console or through-wall air conditioners; space heaters; food waste grinders; dishwashers; washing machines; water heaters; clothes dryers; or other motor-operated	
appliances not exceeding one horsepower (HP) (746 W) in rating, each	$ 8.43
Note: For other types of air conditioners and other motor-driven appliances having larger electrical ratings, see Power Apparatus.	
Nonresidential Appliances	
For nonresidential appliances and self-contained factory-wired, nonresidential appliances not exceeding 1 horsepower (HP), kilowatt (kW) or kilovolt-ampere (kVA), in rating, including	
medical and dental devices, food, beverage and ice cream cabinets; illuminated show cases, drinking fountains, vending machines, laundry machines, or similar types of equipment,	
each. Note: For other types of air conditioners and motor-driven appliances having larger electrical ratings, see Power Apparatus.	$ 8.43
Power Apparatus	
For motors, generators, transformers, rectifiers, synchronous converters, capacitors, industrial heating, air conditioners and heat pumps, cooking or baking equipment and	
other apparatus, as follows:	
Rating in horsepower (HP), kilowatts (kW), kilovolt-amperes (kVA), or kilovolt-amperes-reactive (kVAR):	
Up to and including 1, each	$ 8.43
Over 1 and not over 10, each	$ 21.84

Over 10 and not over 50, each	$ 43.70
Over 50 and not over 100, each	$ 87.92
Over 100, each	$ 132.32
Note: For equipment or appliances having more than one motor, transformer, heater, etc., the sum of the combined ratings may be used.	
Note: These fees include all switches, circuit breakers, contractors, thermostats, relays and other directly related control equipment.	
Busways	
For trolley and plug-in-type busways, each 100 feet (30 480 mm) or fraction thereof	$ 12.88
Note: An additional fee will be required for lighting fixtures, motors and other appliances that are connected to trolley and plug-in-type busways. Fee not required for portable tools.	
Signs, Outline Lighting and Marquees	
For signs, outline lighting systems or marquees supplied from one branch circuit, each	$ 43.70
For additional branch circuits within the same sign, outline lighting system or marquee, each	$ 8.43
Services	
For services of 600 volts or less and not over 200 amperes in rating, each	$ 54.18
For services of 600 volts or less and over 200 amperes to 1,000 amperes in rating, each	$ 110.38
For services over 600 volts or over 1,000 amperes in rating, each	$ 220.75
Miscellaneous Apparatus, Conduits, and Conductors	
For electrical apparatus, conduits, and conductors for which a permit is required but for which no fee is herein set forth	$ 32.32
Note: This fee is not applicable when a fee is paid for one or more services, outlets, fixtures, appliances, power apparatus, busways, signs or other equipment	
OTHER INSPECTIONS AND FEES (Electrical)	
*Inspection outside of normal business hours, per hour (Minimum charge two hours)	$ 105.00
*Reinspection fees assessed under provisions of section 305.8, per inspection.	$ 105.00
*Inspection for which no fee is specifically indicated, per hour (Minimum charge one half hour)	$ 105.00
*Additional plan review required by changes, additions or revisions to plans or to plans which an initial review has been completed. (Minimum charge one half hour)	$ 105.00
*Or the total hourly cost to the jurisdiction, whichever is greatest. This cost shall include supervision, overhead, equipment, hourly wages and fringe benefits of the employees involved.	
Plumbing Fees	**Fee**
For the issuance of each plumbing permit.	$ 105.00
For issuing each supplemental permit for which the original permit has not expired, been cancelled or finaled.	$ 12.88
Unit Fee Schedule	
Fixtures and vents. For each plumbing fixture or trap set of fixtures on one trap. (Including water, drainage piping and backflow protection thereof)	$ 17.41
For repair or alteration of drainage or vent piping each fixture.	$ 8.43
Sewers, Disposal Systems and Interceptors	
For each building sewer and each trailer park sewer.	$ 43.78
For each cesspool.	$ 66.16
For each private sewage disposal system.	$ 132.32
For each industrial waste pretreatment interceptor, Including its trap and vent (exception kitchen-type grease interceptors functioning as fixture traps).	$ 35.34
Rainwater systems per drain (inside building).	$ 17.41
Water Piping and Water Heaters	
For installation, alteration, or repair of water piping or water treating equipment, or both, each.	$ 8.43
For each water heater including vent. (For vents only see Table 3-C).	$ 21.84
Gas Piping Systems	
For each gas piping system of one to five outlets.	$ 10.93
For each additional outlet over five, each.	$ 1.95
Lawn Sprinklers, Vacuum Breakers and Backflow Protection Devices	
For each lawn sprinkler system on any one meter, including, backflow protection devices thereof.	$ 26.29
For atmospheric-type vacuum breakers or backflow protection devices not included in Item 1: 1 to 5 devices.	$ 21.84
For over 5 devices, each	$ 4.00
For each backflow-protection device other than atmospheric-type vacuum breakers: 2 inches (50.8mm) and smaller.	$ 21.84
Over 2 inches (50.8mm)	$ 43.78

Swimming Pools For Each Swimmimg Pool Or Spa.	
Public Pool	$ 162.06
Public Spa	$ 107.89
Private pool	$ 107.89
Private Spa	$ 53.73
Miscellaneous (Plumbing)	
For each appliance or price of equipment regulated by the plumbing code but not classed in other appliance categories, or for which no other fee is listed in this code.	$ 17.41
Other Inspections and Fees (Plumbing)	
*Inspection outside of normal business hours, per hour (Minimum charge two hours)	$ 105.00
*Reinspection fees assessed under provisions of section 305.5, per inspection.	$ 105.00
*Inspection for which no fee is specifically indicated, per hour (Minimum charge one half hour)	$ 105.00
*Additional plan review required by changes, additions or revisions to plans or to plans which an initial review has been completed. (Minimum charge one half hour)	$ 105.00
*Or the total hourly cost to the jurisdiction, whichever is greatest. This cost shall include supervision, overhead, equipment, hourly wages and fringe benefits of the employees involved.	
City Of Ukiah Fees	
Mandatory Training and Certification surcharge. (based on a % of building permits, plan review, and utility permit fees)	4%
Technology and records management surcharge. (based on a % of building permits, plan review, and utility permit fees)	3%
General plan update fund. (based on a % of building permits, plan review, and utility permit fees)	15%
Temporary certificate of occupancy. (Based on the project size and timeframe.) (60 Days)	
> $100,000.00	$ 500.00
<$100,000.00	$ 1,000.00
Request for alternate materials and methods review. (100% cost recovery fully burdened rate per hour)	$ 230.00
Appeal to building regulations appeal board. (Two Hours of Building Official time minimum)	Cost
Postage - 3rd party plan check. (100% cost recovery)	
Red Tagged work without permits violation fee (Permit fee plus violation fee)	3 Times
New deck/decking. (per square foot)	$ 37.80
Re-roofing shingles only. (per square foot)	$ 2.70
Re-roof sheathing/ plywood. (per square foot)	$ 2.70
Temporary structure (Max 60 days)	$ 225.00
Residential Solar permit. Max permit Fee 450.00 to come in to compliance with AB 1414	$ 368.50

Agenda Item No: 13.a.

MEETING DATE/TIME: 9/3/2025

ITEM NO: 2025-905

City of Ukiah

AGENDA SUMMARY REPORT

SUBJECT: Consideration of the 2025 Sewer System Management Plan Update.

DEPARTMENT: Water Resources

PREPARED BY: Sean White, Water Resources Director

PRESENTER: Sean White, Water Resources Director.

ATTACHMENTS:

1. Ukiah SSMP w Appendices (08.20.2025)

Summary: The City Council will review and consider approving the 2025 Sewer System Management Plan.

Background: The State Water Resources Control Board (SWRCB) first issued its Statewide Waste Discharge Requirements (WDR) Sanitary Sewer Systems (Order No. 2006-0003) in May 2006. The order required public agencies that own or operate a sanitary sewer system to develop and implement an Sewer System Management Plan (SSMP) aimed at reducing sewer spills or Sanitary Sewer Overflows (SSOs). It also required agencies to report all SSOs electronically to the SWRCB.

The City of Ukiah (City) and Ukiah Valley Sanitation District (UVSD or District), which are both enrolled under the WDR, first developed a SSMP in July 2009. The initial SSMP was prepared by Winzler & Kelly to meet the requirements of the 2006 Order. The SSMP preparation effort compliments the maintenance, management and policy activities that the City and District are undertaking and provides a framework for organizing, measuring and monitoring on-going activities. The SSMP has been updated as needed over the years, most recently by Larry Walker Associates (LWA) in August 2025 (Attachment 1) in order to meet the requirements stipulated in the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems Order No. WQ 2022-0103-DWQ (2022 SSS WDR), which supersedes the 2006 order and its subsequent amendments.

The SSMP describes how the City and District construct, manage, operate, and maintain their sanitary sewer system by addressing each of the 11 elements of the plan. These elements are summarized below:

(1) Introduction and Goals
(2) Organization and Chain of Communications for SSMP
(3) Legal Authority to Operate and Maintain Sewage Collection System
(4) Sewer System Operation & Maintenance Program
(5) Sewer System Design and Performance Provisions
(6) Spill Emergency Response Plan
(7) Sewer Pipe Blockage Control Program
(8) System Evaluation and Capacity Assurance and Capital Improvements
(9) Operation and Maintenance Monitoring, Management and Plan Modifications
(10) SSMP Audits
(11) Communication Program with Public and Stakeholders

Discussion: Staff recommends approval of the 2025 Sewer System Management Plan (Attachment #1). UVSD will consider approval at its September 10th meeting.

Recommended Action: Approve Sewer System Management Plan 2025 Update.

BUDGET AMENDMENT REQUIRED: N/A

CURRENT BUDGET AMOUNT: N/A

PROPOSED BUDGET AMOUNT: N/A

FINANCING SOURCE: N/A

REVENUE: **GRANT:** N/A

PREVIOUS CONTRACT/PURCHASE ORDER NO.: N/A

COORDINATED WITH: N/A

STRATEGIC PLAN (SP): N/A

CLIMATE INITIATIVES (CI): N/A

GENERAL PLAN ELEMENTS (GP): N/A

Approved:
Sage Sangiacomo, City Manager

AUGUST 2025

CITY OF UKIAH AND UKIAH VALLEY SANITATION DISTRICT

Sewer System Management Plan

PREPARED BY:

LARRY WALKER ASSOCIATES
science | policy | solutions

PREPARED FOR:

City of Ukiah

UKIAH VALLEY SANITATION DISTRICT

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1 INTRODUCTION AND GOALS

1.1 REGULATORY REQUIREMENTS FOR THE INTRODUCTION AND GOALS ELEMENT

The regulatory requirements for the *Introduction and Goals* Element of the Sewer System Management Plan (SSMP) are summarized as follows:

a) The SSMP narrative introduction must discuss the following: (1) Regulatory Context, (2) SSMP Update Schedule, and (3) Overview of the Sewer System Assets, with a reference to a Sewer System Map that can be made available to the state Water Resources Control Board (SWRCB).
b) The goal of the SSMP is to provide a plan and schedule to: (1) properly manage, operate and maintain all parts of the sanitary sewer system, (2) reduce and prevent Sanitary Sewer Overflows (SSOs) or spills, and (3) contain and mitigate any spills that do occur.

1.2 REGULATORY BACKGROUND

The SWRCB first issued its Statewide Waste Discharge Requirements (WDR) Sanitary Sewer Systems (Order No. 2006-0003) in May 2006. The order required public agencies that own or operate a sanitary sewer system to develop and implement an SSMP aimed at reducing sewer spills or SSOs. It also required agencies to report all SSOs electronically to the SWRCB.

The City of Ukiah (City) and Ukiah Valley Sanitation District (UVSD or District), which are both enrolled under the WDR, first developed an SSMP in July 2009. Ukiah is a full service City governed by an elected Council. The District is a special purpose district governed by an elected Board. The initial SSMP was prepared by Winzler & Kelly to meet the requirements of the 2006 Order. The SSMP preparation effort compliments the maintenance, management and policy activities that the City and District are undertaking and provides a framework for organizing, measuring and monitoring on-going activities. The SSMP has been updated as needed over the years, most recently by Larry Walker Associates (LWA) in August 2025 in order to meet the requirements stipulated in the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems Order No. WQ 2022-0103-DWQ (2022 SSS WDR), which supersedes the 2006 order and its subsequent amendments.

The SSMP describes how the City and District construct, manage, operate, and maintain their sanitary sewer system by addressing each of the 11 elements of the plan. These elements are summarized below:

(1) Introduction and Goals
(2) Organization and Chain of Communications for SSMP
(3) Legal Authority to Operate and Maintain Sewage Collection System
(4) Sewer System Operation & Maintenance Program
(5) Sewer System Design and Performance Provisions
(6) Spill Emergency Response Plan
(7) Sewer Pipe Blockage Control Program
(8) System Evaluation and Capacity Assurance and Capital Improvements

(9) Operation and Maintenance Monitoring, Management and Plan Modifications
(10) SSMP Audits
(11) Communication Program with Public and Stakeholders

1.3 SEWER SYSTEM MANAGEMENT PLAN UPDATE SCHEDULE

Based on new requirements in the 2022 SSS WDR, SSMPs are to be updated and re-certified by governing bodies (City Council or Board of Directors) on a six-year frequency, with the first update being due August 2, 2025, for a service area between 10,000 and 100,000, such as the City of Ukiah. The District serves a smaller population, and its regulatory due dates are offset by nine months from the City's deadlines (i.e., the District's SSMP update deadline is May 2, 2026). Because this document covers both agencies, it is being prepared to accommodate the stricter requirements.

In addition to SSMP updates, the SSS WDR requires that SSMP internal audits be conducted at a three-year frequency. Internal audits are conducted to document the success of the SSMP and evaluate how to improve current procedures to ensure the goals and objectives of the SSMP continue to be met. Results and recommendations from SSMP audits guide revisions to the SSMP as deficiencies and improvements are identified. The most recent SSMP Audit was conducted in April 2025.

The City and District's SSMP internal audit, updates, and re-certification schedule from 2025 through 2031 is presented in **Table 1**.

Table 1. SSMP Activities Schedule for 2022 SSS WDR

Task	City of Ukiah Due Date	UVSD Due Date
SSM Audit	February 2, 2025	November 2, 2025
SSMP Re-certification and Update	August 2, 2025	May 2, 2026
SSMP Audit	February 2, 2028	November 2, 2028
SSMP Audit	February 2, 2031	November 2, 2031
SSMP Re-certification and Update	August 2, 2031	May 2, 2032

1.4 SEWER SYSTEM ASSET OVERVIEW

The City of Ukiah is located in the Ukiah Valley in southern Mendocino County. It was incorporated in 1876 and has an estimated current population of 16,000 people. The City owns and operates the City of Ukiah Wastewater Treatment Plant (WWTP) and associated sewer system (collectively referred to as the Facility). The facility serves the City and residential areas to the north and south of Ukiah, as well as east of the Russian River, in Mendocino County.

The Facility treats wastewater from two entities, the City and UVSD, which total an approximate population of 22,000. UVSD also serves Mendocino College, El Dorado Estates, Vichy Springs and areas contiguous to the City. UVSD owns the collection system in its service area and the City maintains it. The District's facilities are generally satellite facilities to the City's collection system.

The City does not accept wastewater from any collection system not owned or maintained by the City. A map of the City and UVSD systems is shown in Figure 1.

The sewer system in the City and UVSD consists of approximately 67 miles of pipelines that are 6-inches in diameter or larger. A trunk sewer that ranges in size from 15 to 42 inches in diameter extends northward from the facility for a distance of 6 miles. The majority of the sewers are gravity collection lines. There are no bypasses or overflow structures in the system. Three lift stations from El Dorado Estates, Ford Street, and Vichy Springs discharge to force mains that cross under the Russian River. Each lift station has a bypass pipe around the pumps that allows the system to flow by gravity (via a siphoning effect) and prevent lift station overflows. Upper and lower laterals are privately owned and the sole responsibility of the owner. The City can, however, provide assistance during emergencies.

The City and the District are considering updating the Wastewater Ordinance to split the responsibility for the laterals at the public right of way (whereas the City/District would be responsible for the lower laterals); however, at the time of this SSMP update, there is no projected timeline for this potential policy change.

With respect to stormwater infrastructure, the City manages its stormwater infrastructure; therefore, access to maps and facilities during spills are readily available to responding staff. There are no structures diverting stormwater to the sewer system in the City jurisdiction. UVSD does not have an underground stormwater collection system; any spills in the UVSD jurisdiction can be visually tracked to nearby ditches. In case of an emergency within the UVSD boundary, City staff can obtain access to maps and facilities from UVSD staff.

The flow from commercial and business facilities is approximately 28 percent of the total WWTP inflow. Commercial and business facilities served by the facility include restaurants, hotels, car washes, automotive mechanics, car dealerships, hospitals, dental offices, photo processors, and other typical small city businesses. The remaining 72 percent of flow is considered residential flow. The City does not accept flow from septage, chemical toilets, or other bulk waste sources. As of 2025, the City has 2,985 residential connections and 566 commercial connections and UVSD has 1,002 residential connections and 136 commercial connections.

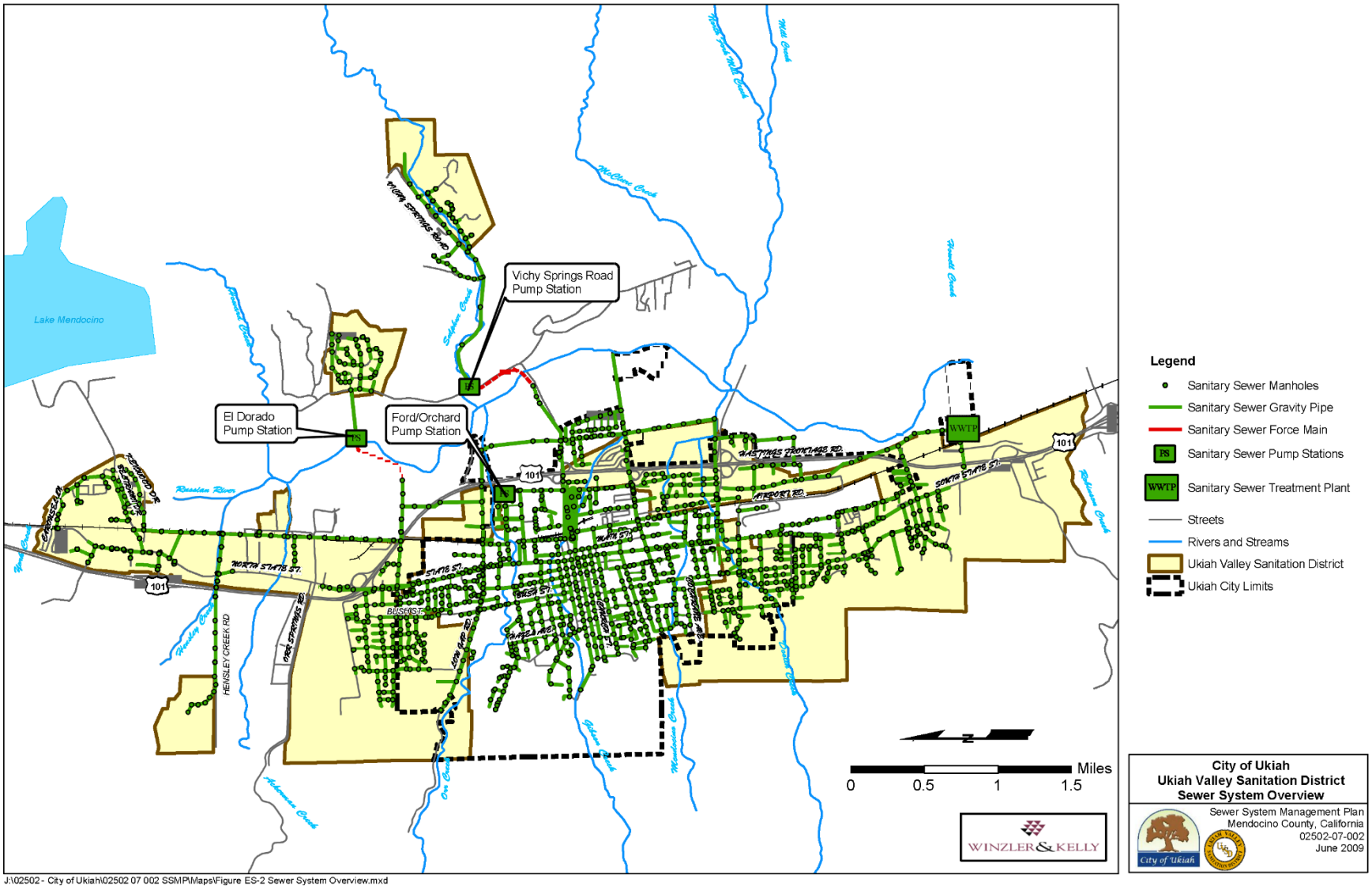


Figure 1. City of Ukiah and UVSD Sewer System Overview

1.5 SEWER SYSTEM MANAGEMENT PLAN GOALS

Both the City Council and the Ukiah Valley Sanitation District Board of Directors have approved the following goals for the SSMP program:

(1) Maintain or improve the condition of the collection system infrastructure in order to provide reliable service now and into the future.
(2) Cost-effectively minimize infiltration/inflow (I&I) and provide adequate sewer capacity to accommodate design storm flows.
(3) Minimize the number and impact of SSOs that occur.

2 ORGANIZATION

This section of the SSMP identifies City staff responsible for implementing the SSMP, responding to spill events, and meeting the spill reporting requirements. This section also includes the designation of the Authorized Representative to meet SSS WDR requirements for completing and certifying spill reports.

2.1 REGULATORY REQUIREMENTS FOR ORGANIZATION ELEMENT

This element must identify:

a) The name of the Legally Responsible Official;
b) The position titles, telephone numbers, and email addresses for management, administrative, and maintenance positions responsible for implementing specific SSMP elements;
c) Organizational lines of authority; and
d) Chain of communication for reporting spills from receipt of complaint or other information, including the person responsible for reporting spills to the State and Regional Water Boards and other agencies, as applicable.

2.2 ORGANIZATION DISCUSSION

The City's policy making body is the City Council, which consists of five elected members. The City Council is a general governmental body and among its many activities, the Council sets policy, approves rates, and authorizes contracts related to its sewer collection system and wastewater treatment plant.

The Ukiah Valley Sanitation District's policy making body is its Board of Directors, which consists of five elected members. The District's Board of Directors is a special purpose board, focusing only on sewer system issues. The Board of Directors sets policy, approves rates and authorizes contracts related to its sewer collection system and trunk lines.

The City and the District have a contractual relationship that affects both the treatment plant and sewer collection system. The District has a capacity share in the treatment plant, which the City owns and operates. The District has also contracted with the City to operate the collection system that it owns. All engineering and operational staff persons are employees of the City.

The City's chief executive is the City Manager, who enforces policy, plans strategy, leads staff, allocates resources, delegates responsibility, authorizes outside contractors to perform services, and generally leads communication to the public. The District is managed by a District Manager, who is the District's sole paid employee. The District Manager enforces policy, plans strategy and serves as the liaison to the City on contractual matters.

The City staff includes a City Clerk and the District Manager provides clerk services for the District. The clerks' functions include publication of agendas, minutes and notices in accordance with the law, management and filing of Ordinances and Resolutions adopted by the Council and Board of Directors and arrangement for emergency meetings if necessary.

The Department of Public Works organization chart for day-to-day operations is illustrated in **Figure 2**. This staff provides for the engineering and operational needs of both City and District facilities. The roles and responsibilities of day-to-day operational staff are described below.

Director of Water Resources (Director) – Prepares wastewater collection system planning documents, manages capital improvement delivery system, documents new and rehabilitated assets, and coordinates development and implementation of SSMP. The Director provides management oversight for the Water and Collection Systems Distribution as well as for the Water and Wastewater Treatment groups. The Director reports to the City Manager and serves as a liaison with the District.

Water/Sewer Maintenance Supervisor – The Maintenance Supervisor ensures that new and rehabilitated assets meet agency standards, works with field crews to handle emergencies when contractors are involved, provides verbal reports to the Director and implements enforcement actions.

Collection System Operation and Maintenance Group – The Collection System Operations and Maintenance Group includes the Water/Sewer Maintenance Supervisor and the Field Crew. The Water/Sewer Maintenance Supervisor manages field operations and maintenance activities, provides relevant information to agency management, prepares and implements contingency plans, leads emergency response, investigates and reports SSOs, and trains field crews. The Field Crew includes staff that conducts preventive and corrective maintenance activities, and mobilizes and responds to notification of stoppages and SSOs (i.e., mobilize sewer cleaning equipment, bypass pumping equipment, and portable generators).

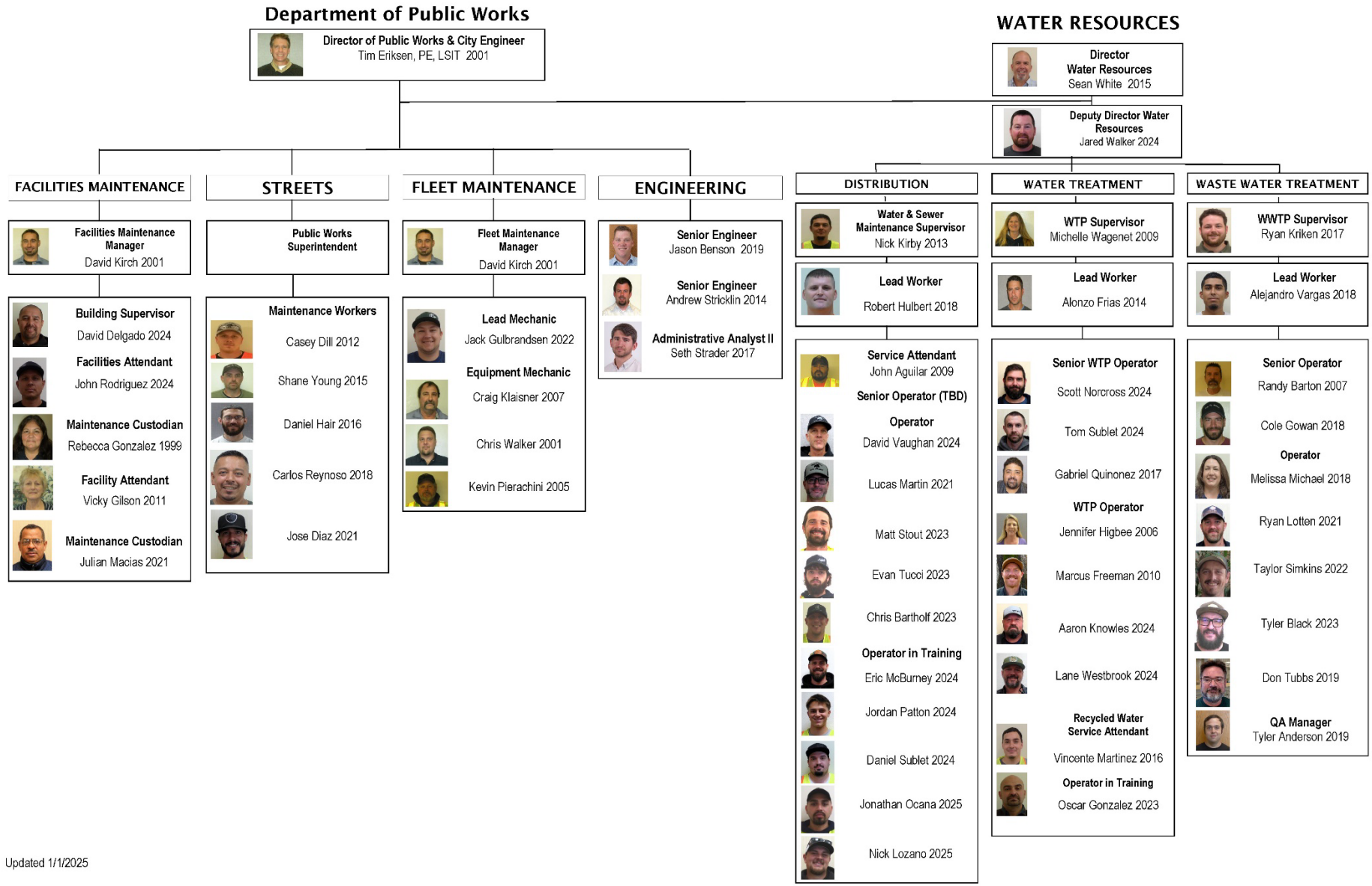


Figure 2. City of Ukiah Department of Public Works Organization Chart

2.3 CHAIN OF COMMUNICATION FOR REPORTING SPILLS

The chain of communication related to SSOs reporting is illustrated in Figure 3. Potential sources for SSO reports include:

- Public phone calls to the local law enforcement agency;
- Public phone calls directly to the City or District or fire protection office; Public phone calls to an after-hours answering service;
- Reports from field personnel and employees of other departments, etc.; and
- Auto-dialer reports from sewage lift stations, etc.

These reports are then forwarded to the appropriate field personnel for investigation and response. Agency contact information is provided in **Table 2**.

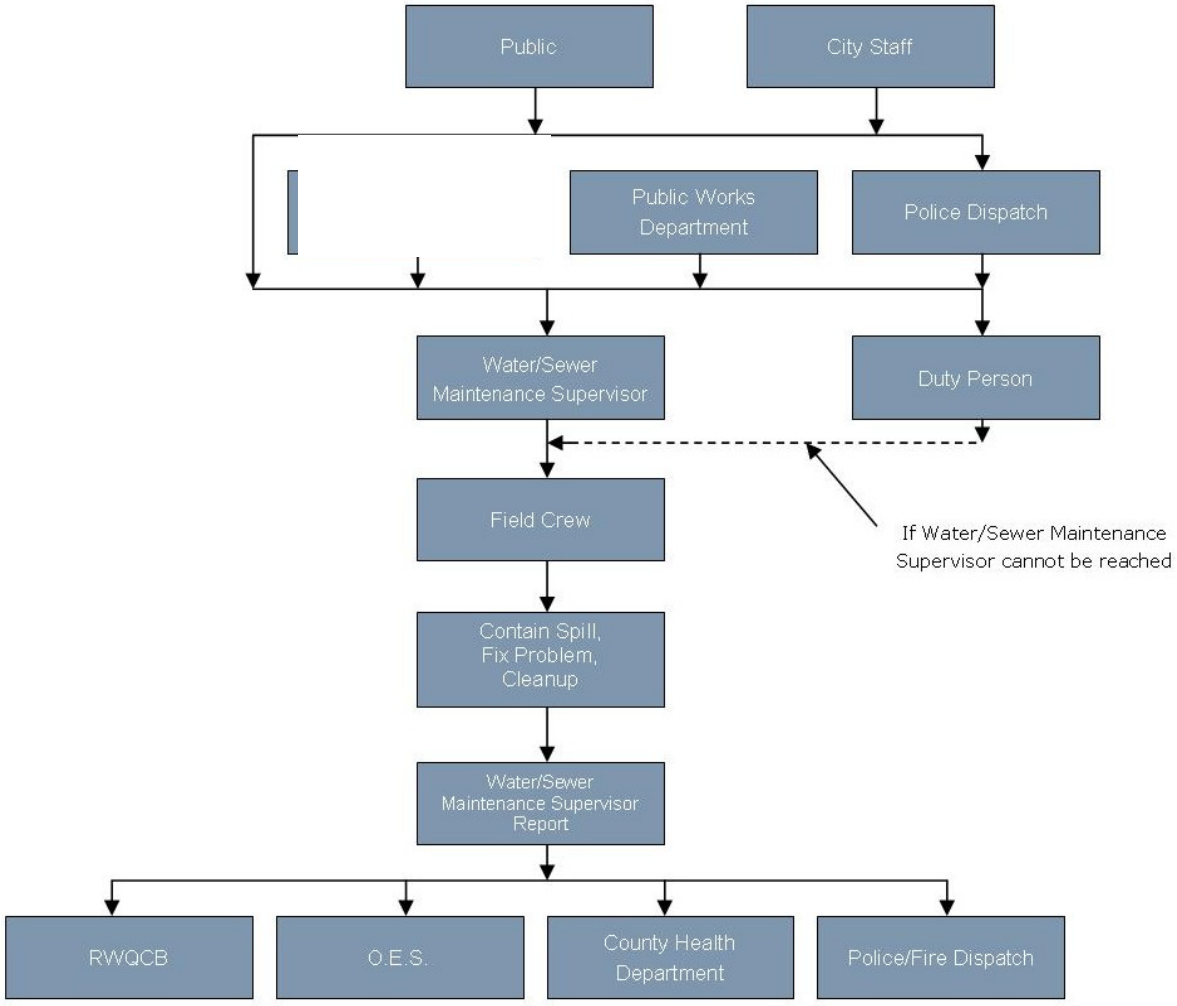


Figure 3. Spill Reporting Chain of Communications

Table 2. Agency's Responsible or Authorized Representatives

Title or Authorized Representative	Name	Email	Phone Number
City and UVSD Legally Responsible Official (LRO)	Nick Kirby	nkirby@cityofukiah.com	(707) 467-5790
City Director of Water Resources	Sean White	swhite@cityofukiah.com	(707) 467-5712
UVSD Interim General Manager	Wing-See Fox	wingseef@urbanfuturesinc.com	(707) 462-4429
City Water and Sewer Maintenance Supervisor	Ryan Kriken	rkriken@cityofukiah.com	(707) 467-5739

3 LEGAL AUTHORITY

This element of the SSMP provides a summary of the City's and District's legal authority to operate, maintain, and enforce standards for the wastewater collection system. The City's and District's respective authority includes all aspects of planning, engineering, construction, operations, and maintenance.

3.1 REGULATORY REQUIREMENTS FOR LEGAL AUTHORITY ELEMENT

The regulatory requirements for the Legal Authority Element of the SSMP are summarized as follows:

The City and District must demonstrate, through collection system use ordinances, service agreements, or other legally binding procedures, that they possess the necessary legal authority to:

a) Prevent illicit discharges into its wastewater collection system (examples may include infiltration and inflow (I/I), storm water, chemical dumping, unauthorized debris and cut roots, etc.);
b) Collaborate with storm sewer agencies to coordinate emergency spill responses, ensure access to storm sewer systems during spill events, and prevent unintentional cross connections of sanitary sewer infrastructure to storm sewer infrastructure;
c) Collaborate with storm sewer agencies to coordinate emergency spill responses, ensure access to storm sewer systems during spill events, and prevent unintentional cross connections of sanitary sewer infrastructure to storm sewer infrastructure;
d) Require that sewers and connections be properly designed and constructed;
e) Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the City and/or District;
f) Limit the discharge of fats, oils, and grease (FOG), as well as any other debris that may cause blockages; and
g) Enforce any violation of its sewer ordinances, service agreements, or other legally binding procedures; and
h) Obtain easement accessibility agreements for locations requiring sewer system operations and maintenance, as applicable.

3.2 LEGAL AUTHORITY DISCUSSION

In 1985, the City of Ukiah adopted Ordinance No. 845 as the City's Wastewater Ordinance. The ordinance provides rules and regulations for the use and construction of sanitary sewer facilities installed, altered, and repaired within the City. This ordinance is codified in Division 4, Utilities Chapter 2 Sewers, Sections 3700.00 et seq, of the Ukiah City Code. The ordinance is found online at www.codepublishing.com/CA/Ukiah/ (updated as needed). Within the ordinance, the City has the following legal authorities:

- Assign responsibility for maintenance of sewer laterals;
- Prevent unlawful sewage disposal into the public sewer collection system;
- Require proper design and construction of sewers and connections;
- Ensure access for maintenance, inspection and repairs;
- Limit discharge of fats, oils, and grease (FOG) and other debris; and
- Enforce violation of its sewer ordinance, as appropriate.

Also in 1985, the Ukiah Valley Sanitation District adopted Ordinance No. 12. This ordinance builds upon District Ordinance No. 1 to serve as the District's Wastewater Ordinance. Like the City's ordinance, Ordinances No. 1 and No. 12 establish the District's authority within its boundaries to regulate sewage disposal in public and private systems, maintain those systems, promulgate connection and lateral requirements, promulgate public sewer construction requirements, oversee uses of its sewer facilities, establish fees and service charges, issue permits, and carry out enforcement. Ordinance Nos. 1 and 12 are available online at https://www.uvsd.org/ordinances?rq=ordinance.

As the City and District share use of the sanitary sewer collection and treatment system, both parties entered into a Participation Agreement in 1995. This Agreement is, in part, to ensure consistency in the design, engineering and treatment requirements of the two jurisdictions. This Agreement is discussed in greater detail in Section 3.3 below.

3.2.1 Sewer Lateral Maintenance Responsibility

Per Article 5, Section 3704.8, of City Wastewater Ordinance and Article 5, Section 5.8, of the District Wastewater Ordinance, property owners are responsible for maintaining the sewer line between the foundation wall of any building and its connection at the main sewer. This portion of the sewer system is referred as a "side lateral". Article 18 of the City's ordinance and Section 5.9 of the District's ordinance provide requirements for the testing, repair, and replacement of all sewer laterals within City and District areas served by the wastewater treatment plant.

Moreover, the City and the District have a Private Sewer Lateral Testing Program, effective January 2007, which requires the cleaning, inspection and testing of sewer laterals connected to public sewers. This program includes residential, multi-family residential, commercial or industrial users and is effective upon the occurrence of events outlined in the program standards. A copy of this program is presented in Appendix D.

The City and the District are considering updating the Wastewater Ordinance to split the responsibility for the laterals at the public right of way (whereas the City/District would be responsible for the lower laterals); however, at the time of this SSMP update, there is no projected timeline for this potential policy change.

3.2.2 Prevention of Illicit Discharges

Article 3 of both the City's and District's wastewater ordinances prohibits illicit discharges. It is the general intent of the City and District to regulate and control the quantity and quality of discharges into the sewer system so that they will not adversely affect the collection and treatment system, as well as human health and environment. Per Articles 3 and 7 of both wastewater ordinances, it is prohibited to discharge the following into public sewer system:

- Effluent from onsite systems (i.e., septic tank, cesspool, etc.), rainwater, storm/surface or subsurface water;
- Swimming pool direct connection drains;
- Cooling water;
- Commercial/industrial wastes in excess of their permit allowance; and
- Any waste disposal containing explosive or flammable substances, corrosive materials, petroleum, solids and garbage, and toxic substances. Inclusive lists of the prohibited wastes are found in these articles of the wastewater ordinances.

Article 4 of both the City's and District's wastewater ordinances allows for private sewage disposal systems where public sewer is not available. However, issuance of a written permit by the City Public Works and/or County Health Officer is required. The type, capacities, locations and layout of a private sewage disposal system shall comply with all requirements of the California Department of Public Health and of the Mendocino County Health Officer. The City has the legal authority to inspect the work at any stage of construction for any private sewage disposal system. Once a public sewer becomes available within 200 feet of a property, a direct connection shall be made to the public sewer in compliance with the ordinances, rules, and regulations of City, and private sewage disposal facilities shall be abandoned.

3.2.3 Require Proper Design and Construction of Sewers and Connections

Section 200 of the City's Standard Plans covers the construction of sanitary sewers in the City and the District. These standards ensure that new sewer lines and connections are properly designed and constructed. The Standard Plans can be accessed in the City's website (https://cityofukiah.com/public-works/#forms).

The Standard Plans are adjunct to the City's and District's wastewater ordinances, which describes authorities and regulations for proper design and construction of private sewer laterals (Article 5 in both) and public sewer system (Article 6 in both). The wastewater ordinances require:

- A written permit, payment of all connection fees, and furnishing of all required bonds before constructing, extending or connecting to any public sewer system. (Article 5,

Section 3704.1 [City] and Section 5.1 [District]); Article 6, Section 3705.1 [City] and Section 6.1 [District])

- Compliance with the standards for the design and construction of sewers within the City in accordance with the Standard Improvement Details (Standard Plans) adopted by the City. (Article 6, Section 3705.2[City] and Section 6.2 [District])
- Submittal of plans, profiles and specifications, complying with all applicable ordinances, rules and regulations of the City, prepared by a civil engineer registered in the State of California, to obtain a permit for public sewer construction. (Article 6, Section 3705.3 [City] and Section 6.3 [District])
- Submittal of "As-Built" drawings showing the actual locations of all mains, structures, wyes, laterals, and other changes to the construction drawings prior to the City's final acceptance of the work. (Article 6, Section 3705.8[City] and Section 6.8 [District]) Testing of all sewerage works prior to the City's final acceptance of the work. (Article 6, Section 3705.9[City] and Section 6.9 [District])
- Installation of separate and independent sewers for every structure. (Article 5, Section3704.3[City] and Section 5.3 [District])
- Installation of clean-outs for all building laterals. (Article 5, Section 3704.5[City] and Section 5.5 [District])

3.2.4 Ensure Access for Maintenance, Inspection and Repairs

Article 6, Section 3705.5, of the City Wastewater Ordinance and Article 6, Section 6.5, of the District Wastewater Ordinance states that all portions of a public sewer extension shall have "a proper easement or grant of right-of-way having a minimum width of ten feet (10') sufficient in law to allow the laying and maintenance of such extension or connection."

The City and District also have the right of entry to any properties for the purpose of inspecting and protecting the public sewer system per City Wastewater Ordinance Article 7, Section 3706.7, Paragraph J, and District Wastewater Ordinance Article 7, Section 7.7, Paragraph J (paraphrased):

"The Director of Public Works, and other duly authorized employees of the District/City bearing proper credentials and identification, shall be permitted to enter all properties served by the City for the purpose of inspection, observation, measurement, sampling, and testing in accordance with the provisions of this ordinance."

The Sewer Standard Plans do not specifically require vehicular access to all manholes and cleanouts; however, easement provisions allow access where necessary. Through its design review process, the City and District requires such access as common engineering practice. See the Sanitary Sewer Standards of Practice (SOP) in Appendix D for more information.

3.2.5 Limit Discharge of Pipe Blocking Substances

Ordinance No. 1, which regulates the use of the public sewer and drains was adopted by the District in 1958. Section 206 concerns the disposal of wastes and prohibits the discharge of any objectional waste. Objectionable waste is defined as any wastes, that, in the City's or the

District's opinion, can harm the sewers or sewage treatment process. This includes pipe-blocking substances such as FOG, debris, rags, and wipes.

On October 1, 2008, the City adopted Ordinance No. 1111, which amended Article 17 of the City Wastewater Ordinance. The ordinance was prepared and adopted in accordance with the City's 2006 National Pollutant Discharge Elimination System (NPDES) permit in order to control FOG. The City's ordinance provides a framework for the review, permitting, construction, inspection, and ongoing maintenance of facilities that create and discharge FOG into the public sewer system. Article 17, Section 3798 C (d), of Ordinance 1111 states the following:

"No User may intentionally or unintentionally allow the direct or indirect discharge of any petroleum oil, non-biodegradable cutting oil, mineral oil, or any Fats, oils, or Greases of animal or vegetable origin into the POTW (Publicly Owned Treatment Works) system in such amounts as to cause interference with the collection and treatment system, or as to cause pollutants to pass through the treatment works into the environment."

Ordinance No. 1111 is codified in Article 17.5, Section 3798A.7 and coupled with Article 7, Part 3706.1, which prohibits discharge of any waste that could cause damage to the sewer system or cause extra collection, treatment, or disposal cost. Additionally, Article 7, Part 3706.4 prohibits discharge of solids in quantities or of such size capable of causing obstruction to the flow in the sewer system.

Ordinance No. 1111 is applicable within the City limits, including those areas previously within the District's jurisdiction. In April 2009, Ordinance No. 1114 was adopted to remove the City/District overlap area from the City's jurisdiction. District Grease Interceptor Ordinance No. 28 was adopted on December 14, 2006, and is applicable for all portions of the District area. A copy of Ordinances No. 1111 and No. 1114 are available at www.codepublishing.com/CA/Ukiah/ and Ordinance No. 1 and 28 is available at www.uvsd.org/ordinances.

The City's sewer pipe blockage control program is further discussed in Element 7 of the SSMP.

3.2.6 Enforcement Measures

Article 11 of both the City's and District's wastewater ordinances describes different enforcement measures that are available for violations of the sewer ordinances. At first, written notice stating the nature of the violation is provided to any person found to be violating and a reasonable time limit – from twenty-four (24) hours to ten (10) working days – is given for the satisfactory correction. Upon noncompliance with an enforcement action, a public nuisance may be declared which would potentially lead to the violating user being disconnected from the sewer mains. Costs associated with disconnection and reconnection would be paid by the user. Violations are also punishable by monetary fines, imprisonment, or both.

3.3 AGREEMENT WITH SATELLITE AGENCIES

Article 10 of the City Wastewater Ordinance allows the connection of satellite facilities upon execution of an agreement between the City and the satellite agency. The City owns and manages a sewer collection system within its corporate limits and manages the collection

system owned by the District. The District's collection system serves both unincorporated areas of Mendocino County and portions of the City that were annexed in the last 30 years.

The City has had a contractual agreement with the District that affects both the treatment plant and sewer collection system since the adoption of the "Participation Agreement between the City of Ukiah and the Ukiah Valley Sanitation District" on July 19, 1995. A copy of the agreement and its amendments can be provided upon request. A few key items in this agreement are as follows:

- The agreement has an initial term of thirty (30) years.
- The City acts as the agent for all District operation and maintenance funds.
- The City is responsible for the operation, maintenance and repair of the District's trunk sewer and sewage collection system, including all sewer mains constructed within the District.
- The City is responsible for the construction of all required private sewer laterals for public sewer extensions and the inspection of sewer lines installed by subdivision developers.

The basic agreement was amended on March 24, 1999, to address annual costs and budgets. A second amendment was signed by the City and the District on December 15, 2005. Amendment No. 2 allocated new sewer service units within each agency's boundary and described cost sharing for wastewater treatment plant upgrades. No additional amendments have been established since the 2005 amendment.

The City does not have any agreements with stormwater agencies since the City also manages stormwater-related efforts in the service area. As previously noted, there is no underground stormwater infrastructure within the District boundary.

4 OPERATION AND MAINTENANCE PROGRAM

This element of the SSMP provides a summary of the City's O&M Program for the collection system, which includes both City and District facilities.

4.1 SEWER SYSTEM MAPPING

4.1.1 Regulatory Requirements for Sewer System Map

The City and District must maintain an up-to-date map of the sanitary sewer system, showing all gravity line segments, manholes, pumping facilities, pressure pipes, valves, and applicable storm water conveyance facilities. As well as procedures for maintaining and providing State and Regional Water Board staff access to the map(s).

4.1.2 City and District Sanitary Sewer System Base Maps

Maps used by City field crews divide the collection system into a set of maps that are bound with plywood and kept at City offices. This map set shows the location of all sewer mains,

manholes, laterals, pumping stations and pressurized sewer lines (force mains). An overall sewer map completes the set and clearly distinguishes between the sewer collection lines owned by the City and those owned by the District.

In addition, the City maintains an AutoCAD-based Geographic Information System (GIS) database for mapping. The GIS database includes detailed information for all collection system components (District and City), such as identification numbers for manholes, distances between manholes, pipe diameters, and pump station information. However, the GIS database does not include the valve information. The City's Engineering Division is responsible for continuous updates to the GIS database, with new maps provided as needed. Updates to maps are generally made when:

- Facilities are added through public works or private development projects;
- System components are rehabilitated; and
- When corrections are identified through field work.

Electronic maps generated from the GIS database are considered to be real time documents and can be printed for use by field operators and engineering staff at any desirable scale to show any necessary details. **Figure 1**shows a map of the City and District sewer collection systems, and is an example of the mapping capabilities of the GIS database.

Upon receiving a request from State and/or Regional Water Board staff for access to the City's sanitary sewer maps, City staff can provide a copy of the most up-to-date map in an easily accessible format.

4.1.3 City and District Storm Drain System Base Maps

The City and District understand the link between spills and their potential impact on adjacent receiving water bodies. City staff have been trained to capture a spill if it has entered the storm drain system. The City can use its printed maps at the City offices or GIS maps to identify the storm drainage system inlets relative to the sewer collection system.. In order to enhance its Spill Emergency Response Plan (SERP, Element 6) by minimizing the number of potential blind spots in the sewer and storm system, the City has verified the locations of storm drain outlets along Orr Creek and other receiving water bodies adjacent to the sewer collection system to ensure accessibility to the outfalls. The City completed this effort in 2008 with the aid of Global Positioning System (GPS) equipment and field inspections.

4.2 PREVENTIVE OPERATION AND MAINTENANCE

4.2.1 Regulatory Requirements for Preventative Operation and Maintenance

This section of the SSMP must describe the scheduling system and data collection system for preventive operation and maintenance activities conducted by staff and contractors.

The scheduling system must include:

- Inspection and maintenance activities;

- Higher-frequency inspections and maintenance of known problem areas, including areas with tree root problems;
- Regular visual and closed-circuit television (CCTV) inspections of manholes and sewer pipes.

The data collection system must document data from system inspection and maintenance activities, including system areas/components prone to root-intrusion potentially resulting in system backup and/or failure.

4.2.2 Preventive Maintenance Program

In order to monitor and maintain the entire City and District sewer collection system, the City has established O&M practices that collectively form the City's Preventive Maintenance Program. This program is targeted at identifying and eliminating sanitary sewer overflows and blockages. In addition to knowledge and experience with various portions of the sewer collection system, the City's Preventive Maintenance Program activities include the following:

- Routine monitoring and cleaning of the collection system and its lift stations; Ongoing evaluation of a Sewer Maintenance List, including "Hot Spots";
- CCTV inspection; and
- Frequent updates to the parts inventory, including critical components.

The Organizational Chart provided in SSMP Element 2 shows the various personnel responsible for field maintenance of both the City and District facilities.

4.2.2.1 Sanitary Sewer System Operation and Maintenance

City crews conduct general cleaning of the entire collection system on an annual basis and clean known critical areas included in the "Sewer Maintenance List" (Appendix C) more frequently. The City and District experience few spills annually and in general, the volume and frequency of spills has decreased in recent years. The vast majority of spills do not reach surface waters. All spills are reported to the California Integrated Water Quality System (CIWQS). Statistics and details on the frequency and volume of spills experienced to date are presented in the most recently conducted SSMP Audit.

The City has eight maintenance personnel that are assigned to perform O&M of the sewer collection and water system. Two one-ton service trucks and three vactor trucks are utilized to clean pipes and manholes, remove blockages, and respond to spills. The critical area sewer pipes (approximately 23,000 feet), , also known as "Hot Spots", are given high priority, and are monitored, maintained and cleaned at least once a month. Appendix C includes a City CCTV inspection form and sample inspection forms. City crews use these forms to assess the condition of pipelines and manholes during routine inspections or following a spill.

The primary causes for blockages and spills in the sewer collection system have been attributed to accumulation of FOG, roots, and constituents such as heavy-duty shop towels and disposable diapers. The frequency and volume of spills have significantly decreased in recent years. The

Sewer Maintenance List has been incorporated into the City's GIS database in order to better track and map maintenance locations and a corresponding table with maintenance locations in Appendix C. Hydraulic capacity issues are discussed in Element 8 of the SSMP.

Currently, the City has a manual work order system for both routine and targeted operation and maintenance activities. Field crews report to the Water/Sewer Maintenance Supervisor for scheduled operation and maintenance tasks for both types of activities. City personnel and an after-hour emergency phone line are available to receive customer phone calls 24 hours a day, 7 days a week for both City and District customers. The City has also been working closely with the District to address customer complaints and requests.

The "Sewer Maintenance List" is kept in the Water/Sewer Maintenance Supervisor's office and updated as yearly and monthly cleaning is completed. City crews provide input on the date and time of cleaning as well as the debris type and the severity of the blockage. The Sewer Maintenance List has been developed over time based on field observations during routine and targeted inspections of the collection system. The City merged this list, work order documents, manhole and CCTV inspection forms (Appendix C) and record information for the collection system (i.e., pipe, manhole, and pump station metrics) and the City's GIS database into iWorq, a city management system with field data and schedules from the O&M Program.

CCTV inspection is used for overall assessment of both the City and District systems and provides useful visual information where problem areas are located between manholes. This O&M Program component is conducted in part to comply with system assessment goals outlined in the City and District's agreements with Northern California River Watch (River Watch). In addition to general CCTV inspection of the entire collection system, video inspection is used for specific condition assessment of the collection system and for system review following spill events. City crews correct problems that are identified through CCTV inspection and complete the repairs in order of priority. Priority is currently determined based on the observed severity of each problem area and its impact on the collection system and environment. The City's CCTV inspection program is further described in Section 4.5 below.

4.2.2.2 Pump Station Operation and Maintenance

There are three sanitary sewer pump stations located in the City and District service area (see **Figure 1**). Each pump station includes two pumps with control systems for manual operation during a power loss or other emergency situation. Pump stations are currently monitored by daily visual inspections. The City does not currently utilize a Supervisory Control and Data Acquisition (SCADA) system to remotely operate the pump stations. The City recently installed a telemetry system for each pump station (CVD-2000 Cellular Voice Dialer) to remotely notify the City of pump station alarms.

The City utilizes portable pumps located at the WWTP if bypass pumping is required within the collection system. These pumps are not capable of bypass pumping at the pump stations. Pump stations do not have back-up power systems (i.e., generators); the City is evaluating the need for

a portable standby power generator that could operate a pump station in an emergency situation.

Pump stations are cleaned at least monthly by City field personnel. The City follows the recommended pump maintenance schedule from the pump manufacturers. Comprehensive maintenance of pump station piping, valves and other equipment is also performed by the City according to the pump station O&M manuals kept in the Water/Sewer Maintenance Supervisor's office. Both of the City's one-ton service trucks have mounted electric cranes with a service rating of 2,700-pounds that are capable of removing and servicing pumps or other heavy equipment.

A complete list of the City's rolling stock and field equipment is maintained and is available to City staff. This list is reviewed and updated frequently to ensure spare parts are always available in case of an emergency.

4.3 REHABILITATION AND REPLACEMENT PLAN

Finally, the rehabilitation and replacement plan should include a capital improvement plan that addresses proper management and protection of the infrastructure assets. The plan shall include a time schedule for implementing the short and long term plans together with a schedule for developing the funds needed for the capital improvement plan.

4.3.1 Sanitary Sewer System Inspection and Condition Assessment

The sewer collection system is susceptible to damage and blockages due to structural problems such as joint separation, debris buildup from roots, grease, and paper towels. Further, the collection system has reduced hydraulic capacity in various locations due to infiltration and inflow (I/I). The target of inspection and condition assessment is to locate areas within the collection system impacted by these factors and make corrections as needed.

The City's previous sewer master plan document, Wastewater Collection System and Treatment Improvements, was conducted by Kennedy Engineers in 1978. The 1978 study identified a number of possible sources of I/I, including uncapped plumbing, residential lateral leaks, manhole leaks, and cracked pipes. That study proposed no major reductions in, or remedies for, I/I at that time. However, based on the overall findings of the report, the City chose to expand and improve its wastewater treatment plant to accommodate future anticipated flows.

The City uses its own equipment and staff to perform collection system inspections. The City video inspects the entire sewer collection system annually, including District facilities, or more often for Hot Spots, and maintains the "Sewer Maintenance List" for Hot Spots and "Maintenance and Repairs" list for general inspections. These records are grouped by year and are kept in the Water/Sewer Maintenance Supervisor's office. The records include information regarding the date and time of the cleaning, the length of the pipes that have been inspected, and all maintenance procedures. There is also a summary page at the beginning of each year's data that shows the total number of sewer lines that have been cleaned, lined, repaired and replaced as well as the number of new lines constructed during that year.

The manhole inspection form provided in Appendix C is an example of the type of paperwork completed by field personnel during collection system inspection. An example of a closed circuit television video (CCTV) inspection report from the City of Los Angeles for pipeline inspection is also included in Appendix C.

4.3.1.1 CCTV Inspection

Beginning in 2006, the City started to assess the physical condition of the entire sewer collection system, including District facilities, by CCTV inspection performed by City personnel. The inspection has been performed with standard CUES Granite XP software which is certified by the National Association of Sewer Service Companies (NASSCO) Pipeline Assessment and Certification Program (PACP). Problem areas are generally repaired by City crews following identification during CCTV inspection.

The records of the CCTV inspections are collected in external hard drives and can be copied to a DVD for viewing and record keeping. Print outs from the software are kept in individual binders for each year and include descriptions of each observed structural or maintenance problem as well as other features of the pipe reach such as lateral connections. CCTV videos and reports can also be added to a GIS database. The database has the capability to create links between stored files such as videos, pictures, and reports. These files would be accessed directly from the database or as “Hot Links” within an electronic map. A Hot Link is essentially a hyperlink that allows a user to click on a point in the map (i.e., pipe, manhole, pump station, etc.) and be directed to the external file.

To date, the City has completed CCTV inspection for 100 percent of the City and District’s sewer pipes and plans to have the entire collection system inspected on a regular basis.

4.3.1.2 Condition Assessment

Visual inspection of the collection system is performed during manhole and CCTV inspection, occasionally resulting in repair and/or replacement projects; however, condition assessment using NASSCO defect categories and PACP rating procedures is not planned until a second CCTV inspection is conducted. Once a second round of CCTV inspections is completed, ratings will be incorporated into the City’s GIS System database where results can be evaluated to determine rehabilitation and replacement needs, and recommendations made for inclusion in annual budgeting. The City’s CUES Granite XP CCTV software is compatible with NASSCO forms and procedures. This link between programs will provide the City with a smooth transition to NASSCO standards and reporting capabilities. Pipes and manholes will be defined with a “good, moderate, and poor” or a numerical rating system. The scoring information will be linked to the GIS System database and used as a tool to prioritize the City’s rehabilitation and replacement projects. See Appendix C for a summary of NASSCO defect categories and PACP rating procedures for pipelines and manholes.

4.3.2 Asset Management Planning

The City has the necessary ArcView GIS software and AutoCAD files to compile and maintain a database for its sewer collection system. The GIS System database for the collection system includes the following system metrics for pipes, manholes, and pump stations:

- Pipe descriptions, dimensions, and age;
- Manhole descriptions, dimensions, and age; and
- Pump station equipment descriptions and age.

The PACP rating system can be applied once this information for the collection system pipes is added to the database. A similar rating system can be developed by the City for manholes and pump stations. Rehabilitation and replacement projects are identified by the City based on findings from maintenance and inspection efforts.

CIP projects can include both rehabilitation and replacement projects. A common definition for "rehabilitation" is a City sponsored project designed to replace or repair any portion of the sewerage conveyance system including, but not limited to; sewer mains, manholes, and connections to the main sewer line. Replacement projects could be integrated with rehabilitation, but could also include more substantial capital improvement projects.

4.3.3 Rehabilitation and Replacement Projects

Currently, the City and District prepare annual rehabilitation and replacement (R&R) projects based on historical sewer back-ups, visual inspection, and the age of the sanitary sewer collection system. Projects scheduled through the end of FY 2025-2026 include water main replacements throughout the City which are to be performed in conjunction with street improvement projects, replacing the 16-inch steel water and sewer main from PZ1 to Bush Street ($1,500,000) and upgrading the Vichy Springs lift station ($400,000). The estimated CIP cost includes all project costs such as planning, design, construction, and construction management. More information about R&R projects, including budget and funding is provided in Element 8 of the SSMP.

4.3.4 Sewer Lateral Testing Program

In 2007, the City established a "Sewer Lateral Testing Program" (Appendix C) to reduce inflow and infiltration into the sewer collection system. City Ordinance No. 1105 was later adopted on February 6, 2008, to facilitate the proper maintenance of private sewer laterals (available at www.codepublishing.com/CA/Ukiah/). Article 18, Part 3799.1(B) Ordinance states the following:

> "It is the policy of the City to reasonably prevent infiltration, exfiltration and better protect the Sewer Treatment Plant and the environment by requiring a reasonable program of inspection, testing, and if necessary, repair and replacement, or private sewer laterals."

District Ordinance No. 30 was adopted on January 30, 2008, and effectively mirrors City Ordinance No. 1105. This ordinance is available at https://www.uvsd.org/ordinances.

The ordinances provide the City and District with the authority to require rehabilitation and replacement for sewer laterals and a framework for ensuring the completion of required work. If repairs are not completed within a required time frame, the City (or District) may complete the work and add a surcharge to the property's utility account. Sewer laterals are required to be cleaned and tested for the following occurrences:

- Following a sanitary sewer overflow generated from the private lateral; Upon discovery of an illegal connection or discharge;
- Upon application for a building permit where the value of work exceeds $100,000;
- For plumbing fixture additions having two or more fixture units (per California Plumbing Code);
- Addition of bedrooms;
- In conjunction with an R&R project to which the lateral is connected;
- Following a Qualifying Sewer Lateral Service Call; and
- For laterals serving parcels within 100 feet of a waterway that is declared to be impacted by the sewer system.

The ordinances include time frames for cleaning, inspecting, and testing based on the type of occurrence. The ordinances also include a requirement that plumbers, contractors, and other persons be appropriately licensed to perform lateral testing and repair/replacement within the City and District.

To help reduce the cost of lateral repairs and testing, the City Council enacted a grant program wherein up to $2,000 is available per lateral repair/replacement. To apply for the grant included in Appendix C, customers should fill out a "Sewer Lateral Replacement Grant Program Application" and submit to the Public Utilities Department.

4.4 CONTINGENCY EQUIPMENT AND REPLACEMENT

4.4.1 Regulatory Requirements for Contingency Equipment and Replacement Inventories

The City and District must provide equipment and replacement part inventories, including identification of critical replacement parts.

4.4.2 Parts and Equipment Inventory

The City uses QuickBooks software to maintain an inventory of spare and/or replacement parts that can be used for either the City or District system. The inventory is used to track both standard and critical parts for the collection system and pump stations. Appendix C includes a simplified inventory inquiry that shows the part item number, description, and quantity on hand. The program also has the capability to track items such as order numbers, order backlogs, and expected delivery dates.

The City's Public Utilities Purchasing Department regularly updates the inventory to maintain a current record of available parts. Updates to the inventory are provided by personnel in the maintenance department using an on-going "Charge-Outs" list. The inventory does not specifically distinguish between standard and critical parts, but rather a reorder point is established for each critical item so that the City has resources available for immediate response to problem areas and spills. Upkeep of the inventory requires collaboration between City departments, as some parts are used infrequently and others during routine maintenance. Also,

some parts are only reordered when the quantity on hand is exhausted, whereas others may be ordered with a substantial lead time for less common parts.

Pump stations and the trunk lines are considered critical components of the sewer collection system. Standardization of equipment and parts is an ongoing process and requires budgeting. In general, non-standard parts are replaced with standardized parts during maintenance and repairs. Parts for new system components such as the telemetry system equipment for each pump station are standardized at the time of purchase.

All sewer maintenance equipment and replacement parts, including small tools, pipe and pipe fittings, and manhole components, are stored at the City's Corporation Yard (Corp Yard). The rolling stock described in Section 4.4.3 and provided in the City's SERP Appendix A is also stored at the Corp Yard.

4.4.3 Contingency Equipment

Rolling stock and equipment is used for emergency operations as well as for routine operation and maintenance activities. CCTV equipment is used to inspect a pipe following repairs. The City's jetter/rodder and vactor trucks are utilized to remove blockages and assist with the containment and cleanup of a spill. The electric crane mounted on each service truck is used to lift heavy equipment and could be used as a winch. Emergency generators and portable pumps provide temporary power and bypass capability.

As discussed in Section 4.2.2.2, the City uses portable pumps kept at the WWTP to provide bypass pumping within the collection system. The new telemetry equipment provides the City with enhanced notification of alarms and problems at each pump station. The City is also currently evaluating the need for a portable standby power generator that could operate a pump station in an emergency situation.

The City's SERP Appendix A also includes a list of the local vendors, suppliers and contractors who can provide rental equipment during a spill event or if construction conditions warrant outside resources (i.e., shoring, dewatering). Pace Supply is used as the City's emergency contact during non-working hours. Contact information is posted on the Water/Sewer Maintenance Supervisor's board and provided below.

Pace Supply Emergency Phone Numbers (Lucas):

(707) 391-7456 [Mobile] and (707) 467-9110 [Home]

The City has not experienced the need to establish a mutual assistance program with neighboring agencies, though this type of program could be implemented in the future based on system demands and the availability of equipment and personnel.

4.5 TRAINING

4.5.1 Regulatory Requirements for Training

The City must provide in-house and external training on a regular basis for staff in sanitary sewer system operations, maintenance, and require contractors to be appropriately trained. The training must cover:

- The requirements of the 2022 WDR SSS;
- Spill Emergency Response Plan procedures and practice drills;
- Skilled estimation of spill volume for field operators; and
- Electronic CIWQS reporting procedures for staff submitting data.

4.5.2 Sanitary Sewer System Staff Training

Job descriptions prepared by the City's Human Resources Department for all operation and maintenance positions are based on CWEA Collection System Maintenance Certifications requirements. All of the current sewer operation and maintenance staff are CWEA-certified. The City has two field personnel working with CCTV equipment who are NASSCO-PACP trained and certified. This training and certification provides the basis for data collection and condition assessment that will be used in the City's Asset Management Plan.

The City budget includes annual conference and training expenses for its sewer operation and maintenance staff. An example of personnel training and certification for the Water/Sewer Maintenance Supervisor is provided below:

- California OSHA Competent Person
- Confined Space Entry
- Work Zone Safety
- CWEA – Grade III, Collection System Maintenance
- CWEA – Spill-WDR Compliance Workshop Electronic Reporting

Staff training is also done through mentoring, in-house classes and on-the-job training between staff. When new equipment is acquired, the City utilizes the equipment supplier to provide training for appropriate personnel. The Water/Sewer Maintenance Supervisor makes sure the employees have the necessary skills to perform the operations and maintenance required by going over the standard operating procedures for all sewer operation and maintenance crew. Human Resources reviews job descriptions against CWEA requirements and informs the supervisor if training or recertification is needed. The City enforces a six-month probationary period for collection staff employees so that only reliable, trained personnel are hired on a full-time basis.

Contractors that perform work within the City or District are also required to meet the minimum safety requirements set forth by California OSHA and any training guidelines set forth by CWEA for collection system work.

4.5.3 Outreach to Plumbers and Building Contractors

The City implements an outreach program to educate commercial entities involved in sewer construction or maintenance about the proper practices for preventing blockages in private laterals. The City regularly updates its website (www.cityofukiah.com) to provide local plumbers and building contractors with a convenient resource for the City's sewer policies, standards, and

procedures. These documents are also available for distribution at the City or can be discussed by contacting the City's Public Works Department. More discussion about City standards is presented in Element 5 of the SSMP.

The City is also a member of Russian River Watershed Association (RRWA) which has prepared an outreach fact sheet titled "Good Plumbing Practices" to notify plumbing contractors about the potential impact of their work on the City's sanitary sewer system. The RRWA outreach fact sheet is attached in Appendix C.

5 DESIGN AND PERFORMANCE PROVISIONS

The City and District believe that proper installation of sanitary sewer facilities is essential to proper operations. To ensure proper installation, this Sewer System Management Plan addresses the following design and performance provisions:

- Standards for Installation, Rehabilitation and Repair
- Standards for Inspection and Testing of New, Rehabilitated, and Repaired Facilities

Element 5 provides a summary of the City and District wastewater collection system design and construction standards.

5.1 STANDARDS FOR INSTALLATION, REHABILITATION AND REPAIR

5.1.1 Regulatory Requirements for Standards for Installation, Rehabilitation and Repair

The regulatory requirements for the "Standards for Installation, Rehabilitation, and Repair" subsection of the Design and Performance Provisions Element of SSMPs are summarized as follows:

- Updated design criteria, and construction standards and specifications, for the construction, installation, repair, and rehabilitation of existing and proposed system infrastructure components, including but not limited to pipelines, pump stations, and other system appurtenances. If existing design criteria and construction standards are deficient to address the necessary component-specific hydraulic capacity as specified in Element 8 (System Evaluation, Capacity Assurance and Capital Improvements), the procedures must include component-specific evaluation of the design criteria.

5.1.2 Standards for Installation, Rehabilitation and Repair

Article 6 of both the City's Wastewater Ordinance (Division 4, Chapter 2) and the District's Wastewater Ordinance (https://www.uvsd.org/ordinances) include requirements for public sewer construction application, permit, easements, plans, profiles, and specifications prior to the acceptance of the sewer work by the City or District. Design flow and capacity criteria for sewer mains and trunk lines are presented in Element 8 of the SSMP.

All public sewer mains within the City and District are designed and constructed by the City, District, or contractors to the City or District. The City of Ukiah Standard Plans Section 200 –

Sewer establishes minimum standards for the design and construction of public sanitary sewers and guides contractors working on public sanitary sewer projects. The complete Standard Plans document is available on the City's website (https://cityofukiah.com/public-works/#forms, Public Works Department Downloads webpage). Hard copies may also be purchased at the City Clerk's office located at 300 Seminary Avenue. A description of the various standard drawings is provided in the Sewer System Standards of Practice (SOP) document in Appendix D and generally discussed below. The District has adopted and enforces the City's standards.

Sewer Standard Drawing Nos. 210 and 213 describe the general design criteria for construction of new sewer laterals, including pipe materials and required fittings, minimum pipe sizes and slopes, pipe depths, and requirements for connection to sewer mains. Drawing Nos. 215 and 218 describe design criteria used for private force main laterals and multi-sewer connections that would be seldom used in new construction and allowed only at the discretion of the City Engineer or District Manager.

Sewer and water lateral separation requirements are explained in Section 3702.6 of the City's Wastewater Ordinance and Section 3.6 of the District's Wastewater Ordinance. Trench details for sewer mains and service laterals – including the trench width, trench backfill, and compaction requirements – are presented in Sewer Standard Drawing No. 220. Further, Sewer Standard Drawing No. 222 describes the required joint trench for sewer and water laterals.

These Sewer Standard Plans were originally prepared by the City in 1987 and updates were made in 1996. The City's Public Works Department guides any potential updates to the standards.

For rehabilitation and repair projects, the City and District have also been using "Standard Plans for Public Works Construction" (known informally as the "Greenbook"), prepared by the American Public Works Association (APWA) and the Associated General Contractors of California. The City and District have adopted Part 5 – System Rehabilitation as the standard specifications for all rehabilitated and repaired sewer assets. The City and District may opt to add project-specific specifications related to sewer rehabilitation and repair projects on a case-by-case basis.

The City and District own and operate three pump stations and do not anticipate any additional pump stations to be built. Therefore, design standards and construction specifications for pump stations and associated force mains will be developed on a project-specific basis as the need arises.

Beyond the Sewer Standard Plans, the City and District do not have formal sewer specifications, although each entity follows accepted practice, industry standards and, where appropriate, the Greenbook. A Standards of Practice (SOP, Appendix D) incorporating appropriate current sewer system design and construction standards and specifications was adopted by the City and District. The specifications included in this SOP would also apply to sewer pipeline rehabilitation and repair projects.

5.1.3 General Plan Design Flow Criteria

Standards of Practice design flows criteria were based, in part, on the City of Ukiah's General Plan population and future development projections. The City's General Plan was last adopted in 1995. The City has updated its Housing Element every five years since then, as required by State Law, with the most recent draft of the plan being published in 2022. As the City publishes its final version General Plan and future projections become known, design flow criteria should reflect these updates.

5.2 STANDARDS FOR INSPECTION AND TESTING OF NEW, REHABILITATED AND REPAIRED FACILITIES

5.2.1 Regulatory Requirements for Inspection and Testing of New, Rehabilitated and Repaired Facilities Discussion

The "Standards for Inspection and Testing of New, Rehabilitated and Repaired Facilities" are a subsection of the Design and Performance Provisions Element of SSMP. The requirements are summarized as follows:

- The City and District must identify the procedures and standards for the inspection and testing of newly constructed, newly installed, repaired, and rehabilitated system pipelines, pumps, and other equipment and appurtenances.

5.2.2 Standards for Inspection and Testing of New, Rehabilitated and Repaired Facilities Discussion

Consistent with the philosophy that proper installation is the key element to ensure proper operation, the City and District have wastewater ordinances that mandate inspection and testing prior to acceptance of new or repaired facilities. This mandate is found in Section 3705.9 of the City's ordinance and Section 6.9 of the District's ordinance. The City and District ordinances are available online at www.codepublishing.com/CA/Ukiah/ and https://www.uvsd.org/ordinances, respectively.

In an effort to minimize infiltration, exfiltration, and better protect the environment, the City and the District initiated a private sewer lateral testing program in 2007, as codified by the City's Wastewater Ordinance (Articles 1 and 18) and the District's Wastewater Ordinance (Articles 5 and 9); both the City's and District's Sewer Lateral Ordinances were revised in January 2008. This program requires that all sewer laterals connected to the public sewer collection system be inspected and successfully pass a testing procedure upon the occurrence of qualified service calls, change of property use, building remodel or addition, sewer rehabilitation/repair, or spills. These program requirements are detailed in Appendix D. A "qualified service call" is generally defined as a field response by the City to a problem identified in a portion of the sewer collection system. Notification for the qualified service call could come from inspection of the collection system (e.g., CCTV) or as evidenced by a spill that is reported to the City or District.

Prior to performing any sewer lateral testing, the property owner shall submit a completed application to the City or District (Appendix D). Once the application is approved and the permit

is issued, the property owner must contact a licensed contractor to perform the test. The following testing methods are acceptable:

- Closed Circuit Television (CCTV)
- Air Pressure Test
- Smoke Test
- Exfiltration Test
- Flow Monitoring
- Visual Inspection
- Other (as approved)

CCTV is typically the preferred method due to its viability and cost effectiveness. When the testing has been completed, the contractor performing the test submits a written report to the City or District presenting the test results and, in the case of CCTV testing, a copy of the video and inspection log. Upon receipt of the sewer lateral testing report and/or video, the City or District will execute a "Sewer Lateral Certification of Compliance" to the owner. Draft requirements and standards, permit application, and compliance certificate are found in Appendix D.

Often times, the need for lateral repair or replacement is an unanticipated event for a property owner. To help defray the cost of such replacement or repairing, the City and the District have established a Grant Program for eligible property owners. An application for this program is provided in Appendix C.

6 SPILL EMERGENCY RESPONSE PLAN

This section of the SSMP provides a summary of the City's Spill Emergency Response Plan (SERP). The complete plan is attached in Appendix F.

6.1 REGULATORY REQUIREMENTS FOR SPILL EMERGENCY RESPONSE PLAN

The regulatory requirements for the SERP element of the SSMP are summarized as follows:

The City shall develop and implement a Spill Emergency Response Plan that identifies measures to protect public health and the environment. The response plan should be developed as a stand-alone document and summarized in the SSMP. At a minimum, this plan must include procedures to:

a) Notify primary responders, appropriate local officials, and appropriate regulatory agencies of a spill in a timely manner;
b) Notify other potentially affected entities (for example, health agencies, water suppliers, etc.) of spills that potentially affect public health or reach waters of the State;
c) Comply with the notification, monitoring and reporting requirements of the 2022 SSS WDR, State law and regulations, and applicable Regional Water Board Orders;
d) Ensure that appropriate staff and contractors implement the SERP and are appropriately trained;

e) Address emergency system operations, traffic control and other necessary response activities;
f) Contain a spill and prevent/minimize discharge to waters of the State or any drainage conveyance system;
g) Minimize and remediate public health impacts and adverse impacts on beneficial uses of waters of the State;
h) Remove sewage from the drainage conveyance system;
i) Clean the spill area and drainage conveyance system in a manner that does not inadvertently impact beneficial uses in the receiving waters;
j) Implement technologies, practices, equipment, and interagency coordination to expedite spill containment and recovery;
k) Implement pre-planned coordination and collaboration with storm drain agencies and other utility agencies/departments prior, during, and after a spill event;
l) Conduct post-spill assessments of spill response activities;
m) Document and report spill events as required in the 2022 SSS WDR; and
n) Annually, review and assess effectiveness of the SERP, and update the Plan as needed.

6.2 SPILL EMERGENCY RESPONSE PLAN DISCUSSION

As previously noted, the City initially prepared its "Overflow Response and Notification Plan" in January 2002 and conducted various updates to meet evolving regulatory requirements. The complete SERP document is found in Appendix F and includes the following sections:

1. Authority
2. General
3. Spill Response Procedure
4. Public Advisory Procedure
5. Regulatory Agency Notification Plan
6. Media Notification Procedure
7. Distribution and Maintenance of SERP

6.2.1 Spill Notification, Response and Impact Mitigation

Section 3 of the SERP explains spill response procedures from initial notification through field work and internal reporting and includes the following subsections:

A. Receipt of Information Regarding a Spill

This subsection describes the procedures and contact information for receiving a spill report from outside parties or the City personnel. A spill can be reported to City staff during regular business hours at a main phone number which is published in local phone books and on the City website (www.cityofukiah.com). The City also has an automated answering system to receive any calls during non-working hours, weekends, and holidays. A complete list of the internal officials who will receive an immediate spill notification and their contact information is represented in the SERP – Appendix B, "Spill Action Plan." The role of each person during an emergency has been established in a flow chart and is clear and concise.

B. Dispatch of Appropriate Crews to Site of Spill

This subsection illustrates the protocols for immediately dispatching a crew to any site of a reported spill for investigation and response. The City's SERP includes procedures for the notification of appropriate staff needed to respond to a spill in the event extra crews are needed or if the spill occurs outside normal City working hours. Guidelines for documenting any private or public property damages are explained and coordination with a hazardous material response team is also provided.

C. Spill Correction, Containment, Monitoring and Clean-Up

In this subsection, specific actions to be performed by the crews during a spill are described. The City's policy is to be constantly on alert and ready to take all steps possible to prevent the spill from reaching the storm drains, flood control channels, or waters of the State and/or United States, all in accordance with the City's discharge requirements.

Upon arrival at a spill the City crew will initiate the following procedures:

- Determine the cause of the spill;
- Investigate the need for additional assistance or equipment;
- Notify the dispatcher to call the Mendocino County Environmental Health Department, if private property is impacted;
- Take immediate actions to stop the spill.

The spill cleanup procedures for different situations, such as a trunk sewer stoppage, pump station failure, or wet weather spill, are detailed in Appendix B of the SERP. Under most circumstances, the City can handle all response actions with its own maintenance forces and equipment; however, circumstances may arise where the City would utilize its list of pre-approved local vendors to acquire additional equipment. Local contractors would also be utilized for additional labor resources. A list of equipment vendors and contractors is provided in the SERP – Appendix B, Table 4.

This subsection also explains sampling laboratory tests requirements whenever a spill, regardless of volume spilled, reaches surface waters.

D. Overflow Report

The City has an Overflow Report form (SERP Appendix A) that must be completed for both internal and regulatory agency notification of spills. This subsection covers the information to be included in that form, such as date and location of the spill, start and stop time of the spill, estimate of the rate of the spill, indication whether the discharge reached water surfaces and cause of the spill. The Water/Sewer Maintenance Supervisor is responsible to complete the form and promptly forward it to Wastewater Treatment Plant Supervisor in order to notify the regulatory agencies when the spill is eliminated.

E. Customer Satisfaction

In this subsection, the City staff is required to follow up in person or by telephone with the parties reporting the spill and fill out a survey questionnaire. The survey is an assessment for response procedures, spill control and site clean-up, public notification and regulatory agency reporting. The survey is provided in SERP Appendix D.

6.2.2 Spill Public Notification

Section 4 of the SERP describes the actions the City takes to perform public advisory actions and limit public access to areas potentially affected by a spill. The Water/Sewer Maintenance Supervisor is responsible to determine whether temporary signage is required and, if so, the Mendocino County Environmental Health Department will be notified.

Media notification procedures are explained in Section 4 of the SERP. The Water/Sewer Maintenance Supervisor is responsible for notifying the Public Information Officer (PIO). The PIO is the "first-line" of response to the media for any spill.

6.2.3 Spill Regulatory Agency Reporting

Section 5 of the SERP establishes procedures that the City follows to provide formal notice to the regulatory agencies in the event of a spill. Criteria for reporting a spill to the Office of Emergency Services (Cal OES), the North Coast Regional Water Quality Control Board (RWQCB), Mendocino County Environmental Health Department and California Department of Fish and Game are specified depending on the size of the spill and whether or not the discharge affects surface water and/or results in fish kills. A complete list of the regulatory agencies and notification requirements is provided in SERP Appendix E.

The City submits a certification to the RWQCB that Cal OES and the Mendocino County Department of Environmental Health have been notified of any sewer discharge to a drainage channel or surface water. That certification is provided in SERP Appendix F.

6.2.4 Distribution and Maintenance SERP

Section 7 of the SERP provides guidelines for the distribution of the SERP, as well as an overview of the City procedures for ongoing review and updates to the SERP. Staff training is also discussed.

7 SEWER PIPE BLOCKAGE CONTROL PROGRAM

This section of the SSMP provides a description of the City's Sewer Pipe Blockage Control Program for the wastewater collection system. Program elements include problem areas, legal authority, source controls, system maintenance, and public outreach.

7.1 REGULATORY REQUIREMENTS FOR SEWER PIPE BLOCKAGE CONTROL PROGRAM

The regulatory requirements for the Sewer Pipe Blockage Control Program element of the SSMP are summarized as follows:

The City and District shall evaluate their service areas to determine whether a Sewer Pipe Blockage Control Program is needed. If it is determined that Sewer Pipe Blockage programs are not needed, justification must be provided. If pipe-blocking substances are found to be a problem, either the City, the District, or both must prepare and implement a Sewer Pipe Blockage control program to reduce the amount of these substances discharged to the sanitary

sewer system. The Sewer Pipe Blockage Control Program shall include the following as appropriate:

a) An implementation plan and schedule for a public education outreach program that promotes proper disposal of pipe-blocking substances;
b) A plan and schedule for the disposal of pipe-blocking substances generated within the sanitary sewer system service area. This may include a list of acceptable disposal facilities and/or additional facilities needed to adequately dispose of pipe-blocking substances generated within a sanitary sewer system service area;
c) The legal authority to prohibit discharges to the system and identify measures to prevent spills and blockages;
d) Requirements to install grease removal devices (such as traps or interceptors), design standards, maintenance requirements, BMPs requirements and record keeping and reporting requirements;
e) Authority to inspect grease producing facilities and enforce violations;
f) A description of whether or not the City and the District have sufficient staff to inspect and enforce the FOG ordinance;
g) An identification of sewer system sections subject to FOG blockages and an established a cleaning maintenance schedule for each section; and
h) Implementation of source control measures, for all sources of FOG reaching the sanitary sewer system, for each sewer system section identified in (g) above.

7.2 SEWER PIPE BLOCKING CONTROL PROGRAM DISCUSSION

The City implements a FOG Control Program, discussed in detail below. The City does not have a formal root control or rag and debris program. O&M crews are aware of areas prone to roots and these areas are on the hot spots / sewer maintenance list (see discussion Section 4.2.2.1 and hot spots list in Appendix C). The City does not use chemicals for roots control. The City does not conduct any specific outreach regarding rags or wipes, aside from participation in the Russian River Watershed Association (see Section 7.2.5). Issues with rags and wipes blockages are generally in the laterals and result in backups into structures. Crews educate the homeowner/ business on the cause of the blockage at the time. The City used to conduct increased maintenance at one of its lift stations downstream from a senior home. It has since worked with the facility to install a screen at its connection to the public sewer. The facility regularly maintains the screen and no issues have been observed in the City infrastructure since its installation. This type of approach can be implemented at other facilities if similar issues are identified.

Fats, oils, and grease do not easily break down in a sewer collection system, especially when combined with other solid sewer waste constituents and subsurface obstructions (i.e., tree roots, offset joints, side sewer connections, etc.). As with highly-absorbent paper towels, wipes, rags and disposable diapers, FOG creates a maintenance problem that needs to be addressed on a constant basis. FOG can also increase operating costs at the Wastewater Treatment Plan WWTP) by causing high biological oxygen demand (BOD) and chemical oxygen demand (COD) levels.

A proactive approach to keeping the collection system free of blockages not only requires ongoing cleaning and maintenance, but also source identification, pretreatment and public education. The City has worked diligently to keep its and the District's sewer system clear of obstructions. To aid in the process of refining its current regulatory, maintenance and outreach practices, the City has established a FOG Control Program that:

- Identifies FOG sources;
- Enforces City and District codes requiring the installation and maintenance of pretreatment facilities for non-domestic sanitary sewer customers;
- Minimizes FOG related sewer blockages and spills in a cost-effective manner; and
- Educates the public about FOG and its impact on the community and environment.

To refine its current practices and achieve these goals, the City has begun to modify its maintenance and operations procedures and documents. Using available resources from neighboring communities and its staff, the City has created tools including customer surveys, permit applications, and public information material. It has also enhanced its collection system inspection procedures and began to catalog known and potential FOG contributors.

Furthermore, the City continues to address all spills on the spot and takes corrective actions to prevent future occurrences by following the guidelines for investigating FOG-related spills provided in the City's SERP which is found in Appendix F.

7.2.1 Legal Authority

Within their jurisdictional boundaries, both the City and the District have the legal authority to:

- Prohibit the discharge of fats, oils, and grease;
- Prohibit the discharge of pipe-blocking substances;
- Require the installation and maintenance of grease interceptors and traps; and
- Enforcement of the Grease Ordinance, as appropriate.

UVSD's Ordinance No. 1 was adopted in 1958 to regulate use of public sewers and drains. Article II Section 206 of Ordinance No. 1 details that any discharge of human or animal excrement, garbage, or other objectionable waste to the sewer is prohibited, and pipe-blocking substances fall into those categories. The City adopted Ordinance No. 845 Section 4, which prohibits objectionable waste as well, and the requirements of that ordinance were incorporated into City Code Article 3 in Chapter 2, Division 4. It prohibits the placement or deposit of human or animal excrement, garbage, or other objectionable waste on public or private property within City limits.

The City originally adopted Ordinance No. 1059 in 2004 to establish the authority to control the discharge of FOG to its sewer system. The requirements of that ordinance were incorporated into City Code Article 17.5 in Chapter 2, Division 4. The City's Municipal Code, including Article 17, is available online at www.codepublishing.com/CA/Ukiah/ (updated as needed). The revised ordinance is discussed below. Additionally, in 2006, the District adopted Ordinance No. 28 that required all facilities that prepare, serve and make consumable food to install, use and maintain appropriate grease traps and/or inceptors.

In order to improve its FOG Control Program, the City adopted Ordinance No. 1111 in October 2008 as an amendment to Article 17 of Chapter 2, Division 4 of the City Code. Ordinance No. 1111 provides a new framework for the City's FOG Control Program and a broad-reaching protection mechanism for the City of Ukiah's POTW. The ordinance regulates the generation and disposal of grease interceptor waste and outlines general procedures for City compliance with SWRCB requirements and the City's NPDES permit. As the City has grown, parcels from the District have been annexed into the City, but still remain under District jurisdiction. Ordinance No. 1111 supersedes the District's Grease Interceptor Ordinance No. 28 for those properties that are located within the City's boundary, but are still in the District.

All discussion in the following subsections on the City's legal authority is based on the City's Ordinance No. 845 and 1111 and District Ordinance No. 1 and 28 (Grease Ordinances), which are available online at www.codepublishing.com/CA/Ukiah/ and http://www.uvsd.org/ordinances, respectively.

7.2.1.1 Prohibition of Fats, Oils, and Grease Discharge

The Grease Ordinances apply to all non-domestic users and prohibits the discharge of fats, oils and grease into the sewer system as follows:

"No User may intentionally or unintentionally allow the direct or indirect discharge of any petroleum oil, non-biodegradable cutting oil, mineral oil, or any Fats, Oils, or Greases of animals or vegetable origin into the POTW system in such amounts as to cause interference with the collection and treatment system, or as to cause pollutants to pass through the treatment works into environment."

The City and District recognize that domestic (residential) users can also be a significant source of FOG, especially multi-family complexes. While the Grease Ordinances do not regulate the pretreatment of residential flows, portions of the sewer collection system impacted by residential FOG discharge will be targeted by other elements in the FOG Control Program, including identification and maintenance of problem areas and public outreach (Element 11).

7.2.1.2 Requirements for Installation and Maintenance of Grease Interceptor/Trap

The Grease Ordinances require all non-domestic users (both existing and new users) to have an approved, adequately sized, and properly operated and maintained grease interceptor. For ongoing inspection and maintenance operations, as well as for health issues associated with exposure to impounded FOG, grease interceptors must be located outside of buildings in easily-accessed locations. Where space limitations prevent adequate access for an exterior grease interceptor, the Director or District Manager may allow for the installation of a grease trap. These devices are typically installed in the waste line leading from sinks, drains, and other fixtures inside the building.

The installation of any grease removal device is required to obtain a "Grease Interceptor Permit" from the City and District. To become permitted, all facilities must obtain a written interceptor service agreement with a licensed cleaning service and keep the interceptor in effective operating condition. All interceptors must be maintained at the owner's expense and a maintenance record must be kept for a period of three years and be available for any inspection

by the City Compliance Inspector. A copy of the Grease Interceptor Permit Application, its cover letter, and a sample Food Service Wastewater Discharge Survey are provided in Appendix E.

7.2.1.3 Enforcement of Grease Ordinance

The City and District have established compliance criteria for businesses to implement the provisions of the Grease Ordinances. Some flexibility will be afforded to the implementation and initial FOG-removal performance of grease interception devices; however, blockages and any resulting spills caused by permitted and non-permitted facilities will still be subject to the extent of the Grease Ordinance's enforcement section. Businesses are encouraged to consult with the City or District and follow the application and permitting process prior to purchasing, installing, and operating grease interception devices. Similarly, businesses should continually assess the condition and performance of active interception devices and make repairs and/or upgrades as warranted. Modifications to grease interceptor/trap systems or transfers in ownership or operation should be reported to the City or District and require the issuance of a new permit. Performance of grease interception devices will be monitored on an annual basis by the City. Inspection fees can be waived if the business demonstrates that FOG has been properly recycled.

7.2.2 FOG Source Control

The City and District have identified restaurants and businesses involved in food processing or preparation, also known as Food Service Establishments (FSEs), as known or potential FOG contributors to the City's POTW. Following the adoption of the City's Grease Ordinance, the City has undertaken a more aggressive FOG Source Control program, which is also on behalf of the District. The program is now conducted under the supervision of the Water/Sewer Program Coordinator who is a Certified Environmental Compliance Inspector.

Permitting and enforcement alone are not adequate to control the release of FOG into the sewer collection system and environment. To more fully understand and catalog known and potential pipe-blocking substance contributors, the City has created a database of all businesses that could potentially generate FOG. The database was created by field observation and the use of previous records obtained by City staff and it is updated on a regular basis. The database is connected to the City's Geographic Information System (GIS System) so that it can be used to produce maps and store additional information for each FSE.

The City has approximately 70 FOG and auto shop (sand interceptor) permittees. Additional FSEs have been surveyed and it was determined that their operations did not warrant permit issuance or pretreatment facilities.

The City conducts periodic reviews of existing permits, business licenses, water utility accounts, and building permits to identify any potential sources of commercial and industrial wastewater that need to be part of the source control program. Businesses with high flowrates or that may be discharging pollutants of concern are asked to complete and submit an industrial survey/ waste discharge report which is then reviewed and assessed by the City. Based on the City's current NPDES permit (Order No. R1-2024-0016), the City is required to conduct an Industrial Waste Survey (IWS in 2026. The last IWS was conducted by the City during the FY 2020/21.

The City and District will continue to issue permits to FOG generating facilities, ensure that each FSE adequately maintains its grease removal device and promote the engagement of pipe-blocking substance BMPs distributed with the permit application.

7.2.3 Sanitary Sewer System Inspection

To identify and correct portions of the sewer collection system impacted by pipe-blocking substances, the entire sewer system is included in a routine annual preventive maintenance inspection and cleaning schedule.

CCCTV inspection is used as a part of the routine annual schedule to identify problem locations or areas with a high number of blockages caused by pipe-blocking substance. This task is described in more detail in SSMP Element 4.

FOG can accumulate at various points within the sewer collection system, generally within manholes and at pipe joints. Historically, the City has had problems with pipe-blocking substance accumulation on tree roots that have grown into the pipe system. When identified, these and other problem areas are added to the City's Sewer Maintenance List discussed in Section 4.2.2.1 and included in Appendix C.

7.2.4 FOG Disposal Locations

FOG generated by private businesses is not allowed at the WWTP. Generally, businesses that comply with the provisions of the Grease Ordinances will capture FOG within a grease interceptor located outside the building or collect FOG within a grease trap located inside the building and then dispose of it in a waste bin.

Grease collected in disposal bins and interceptors are handled in two ways. Grease haulers collect grease from disposal bins or pump grease from grease interceptors and haul the grease to disposal facilities. Rendering companies generally collect grease from disposal bins and use the grease to produce biofuels, soap, tallow, and feed fat for animal feed. Service and disposal fees are common for hauling companies, with most providing on-demand or regularly scheduled services. Renderers' fees are often low or provided at no charge, as FOG is used as a recycled commodity. Some rendering companies will pay restaurants for FOG.

Table 3 below provides a list of businesses that will contract with restaurants to service grease interceptors (Hauler – Interceptor), haul waste collected in designated waste bins (Hauler – Waste Bin), or collect FOG for processing and secondary use (Renderer). Rendering companies generally collect grease from designated waste bins, while some also pump from grease traps.

While a majority of businesses will contract with rendering and hauling companies to remove and reuse or dispose of FOG waste at offsite facilities, Redwood Oil Company and Aztec Grill have combined resources for the Ukiah Central Chevron gas station and Aztec Grill located at 605 East Perkins Street. Kitchen oil and grease collected from the Aztec Grill is used to create biodiesel fuel for the Chevron station.

Table 3. List of Businesses Providing FOG Services

Business Name (Location)	Phone Number	Services
North State Rendering Co, Inc. (Oroville)	(530) 343-6076	Renderer
One More Time, Inc. (Statewide)	(800) 624-5504	Renderer
Darling International, Inc. (Statewide)	(800) 473-4890	Hauler (Waste Bin)
Waste Management (Ukiah)	(707) 462-2063	Hauler (Interceptor, Waste Bin)
A-1 Septic Tank Services (Little River)	(707) 937-0496	Hauler (Interceptor)
Liquid Environmental Solutions (Statewide)	(866) 694-7327	Hauler (Interceptor)
Roto Rooter (Ukiah)	(707) 466-2996	Hauler (Interceptor)

7.2.5 Public Outreach

Public outreach and education are as important to protecting the POTW as maintenance and enforcement activities. The City and District recognize that an informed public understands the financial and environmental impacts of releasing pipe-blocking substances into the collection system and the requirements to comply with local ordinances. Residential FOG may cause increased maintenance costs for both residents and the City and can cause spills that endanger public health and can damage the environment. Current outreach activities are described below.

7.2.5.1 Russian River Watershed Association

The City is member of the Russian River Watershed Association (RRWA). RRWA works to promote cooperation and implementation of projects that protect watershed resources, restore fisheries and improve water quality and has developed a multi-year Residential Fats, Oils, and Grease (FOG) Source Control Program. This program is intended to increase public awareness of residential FOG-related issues and reduce the number of FOG related spills. Through this program, outreach materials including flyers, stickers, door-hangers, and grease scrapers have been distributed in residential areas (where FOG issues have caused spills) and at local markets, libraries, and education centers. A bi-lingual door-hanger titled “From the Pan to the Can” was created by RRWA and is used in the outreach program. The door-hanger includes a grease scraper and is reproduced in Appendix E. RRWA issued a press release on July 19, 2006, with the intent to raise public awareness of FOG. Since 2006, there have been several articles about FOG written by the RRWA and published in the Ukiah Daily Journal. A copy of the latest press release is provided in Appendix E.

7.2.5.2 Internet Resources

The City’s website (www.cityofukiah.com) is also a good public resource for policies regarding the permitting of grease interceptor devices within the City and the District.

8 SYSTEM EVALUATION, CAPACITY ASSURANCE AND CAPITAL IMPROVEMENTS

This section of the SSMP discusses the City's programs and activities to provide adequate capacity, including the recommended capacity improvement projects and capital improvements.

8.1 REGULATORY REQUIREMENTS FOR SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

The regulatory requirements for the System Evaluation, Capacity Assurance and Capital Improvements element of the SSMP are summarized as follows:

- Routine evaluation and assessment of system conditions;
- Capacity assessment and design criteria;
- Prioritization of corrective actions; and
- A capital improvement plan.

8.2 SYSTEM EVALUATION

8.2.1 Review of Existing Sewer System Data

8.2.1.1 Wastewater Treatment Plant

The WWTP has been operated since 1958. With several WWTP upgrades completed throughout the years, most recently in 2009, the WWTP current capacity is to 3.01 mgd ADWF, 7.0 mgd PWWF for advanced water treatment, and 24.5 mgd PWWF for secondary treatment only. The primary reason for the difference between ADWF and PWWF is I&I into the collection system.

8.2.1.2 Sanitary Sewer System Master Planning

The last comprehensive Wastewater Collection System and Treatment Improvements study (1978 Wastewater Study) for the City and District was prepared by Kennedy Engineers in 1978. Since its completion, this report has served the City and District as a Sewer Master Plan and includes an evaluation of the sewer system capacity through land use planning documents, analysis of existing (at 1977) and projected (at 2000) water and sewer characteristics and wastewater treatment requirements.

The study identifies areas of high ground water elevation located east of State Street and along Dora Avenue between Clay Street and Observatory Avenue that could be a source of high I&I; however, no major reductions in I&I were proposed within the 1978 Wastewater Study. At the study's completion, the City decided to expand and improve its wastewater treatment plant to provide capacity for future anticipated flows.

The sewer collection system has experienced some spills in recent years primarily due to blockages in the collection system (e.g., debris, grease). Spills that occurred during the wet season (November through April) were likely exacerbated by hydraulic limitations in the system due to I&I, but this has not been confirmed through hydraulic modeling or a detailed I&I study. In 2003, Brown and Caldwell prepared a flow monitoring study in conjunction with the City

Wastewater Treatment Plant Improvements Project titled Collection System Flow Monitoring Summary (2003 Flow Monitoring Study). The scope of the study was to identify areas with high I&I rates in the collection system. The program included measurements of rainfall at three rain gauges and flow depth and velocity at eight flow monitoring locations throughout the sewer collection system. The data was used primarily to determine peak dry weather flow (PDWF), PWWF, and associated I&I. Study results indicate that the central and northwest portion of the City (Basins 4 and 6) have relatively high system defects that should be addressed and corrected. The City has been using the findings in the Study to prioritize rehabilitation and repairs projects in the collection system, as detailed in Section 8.5. A copy of the technical memorandum is available upon request.

The City has experienced a moderate population growth over the past years and does not anticipate capacity issues related to increased development in the near future. The City will continue to conduct maintenance and rehabilitation of its sewer system and continue making necessary improvements to ensure it maintains a reliable system for years to come.

8.2.1.3 Sanitary Sewer System Physical Inspection

As discussed in SSMP Element 4, beginning in 2006, the City started to assess the physical condition of the entire sewer collection system, including District facilities, by CCTV inspection performed by City personnel. Problem areas are generally repaired by City crews following identification during CCTV inspection. The City completed a first round of CCTV inspection in 2011.

8.2.2 Sanitary Sewer System Model Construction

The City maintains a GIS database with the horizontal geometry of the sewer system pipelines and manholes. This GIS database was used to build a model of the trunk lines between the WWTP and Ford Road. The model was prepared with the intent to characterize average dry weather flow (ADWF), PDWF, and PWWF in the backbone of the collection system. The model connects the trunk line to flow meter locations identified in the 2003 Flow Monitoring Study to convey cumulative flows from each sewerage basin into the model. Figure 25A-2 in the 2003 Flow Monitoring Study shows the model skeleton prepared for that study. That model skeleton generally corresponds to the portion of the collection system that was modeled for the SSMP shown in **Figures 4** and **5**. The SSMP model was constructed using MWH Soft H2OMap Sewer GIS 9.0, Update No. 3.

City and District record drawings were used to populate the GIS database and hydraulic model with rim and invert information. For areas with no record drawings, the City conducted a field survey to collect the applicable rim and invert elevations. The model includes approximately 5.5 miles of sewer pipes, with diameters ranging in size from 10 to 36 inches, and 69 manholes. Due to the small size of the modeled system, and limitations in the input flow data, the model was constructed as a static model. Future modeling efforts for the collection system will likely be accomplished with a dynamic model suited for an increased number of manholes and pipes.

8.2.3 Assessment of Flow Monitoring Data

The 2003 Flow Monitoring Study identified ADWF and PDWF, but was not able to accurately characterize PWWF as the flow monitoring effort did not capture a storm large enough to interpolate a 10-year, 24-hour design storm and associated I&I. Some assumptions were made regarding PWWF during construction of the hydraulic model for the SSMP; however, without further wet weather flow monitoring, conclusions regarding system performance during peak flow events would be incomplete. Additional wet weather flow monitoring will be necessary to estimate the flows associated with PWWF. **Table 4** documents ADWF and PDWF.

Table 4. ADWF and PDWF

Basin ID	AWDF (mgd)	PDWF (mgd)
1	0.51	0.64
2	0.38	0.43
3	0.96	1.17
4	1.34	1.56
5	0.01	0.01
6	0.81	1.18
7	0.69	0.94
8	0.13	0.18
Total	4.83	6.11

8.2.4 Model Loading

ADWF and PDWF basin flows were input into the model manholes by distributing the flow proportionally over all the parcels in each basin and then identifying which of the modeled manholes each parcel would flow into. Parcels from the City's GIS database were used for this analysis.

8.2.5 Model Results

The results of the trunk sewer modeling show that the current system capacity is adequate to convey current ADWF and PDWF, without surcharging of the pipes. Preliminary modeling identified certain areas in the Trunk Main where surcharging may occur during PWWF events; however, the analysis is limited at this time until further wet weather flow monitoring and hydraulic modeling are completed.

Figure 4. Sanitary Sewer System Model Skeleton (Part 1)

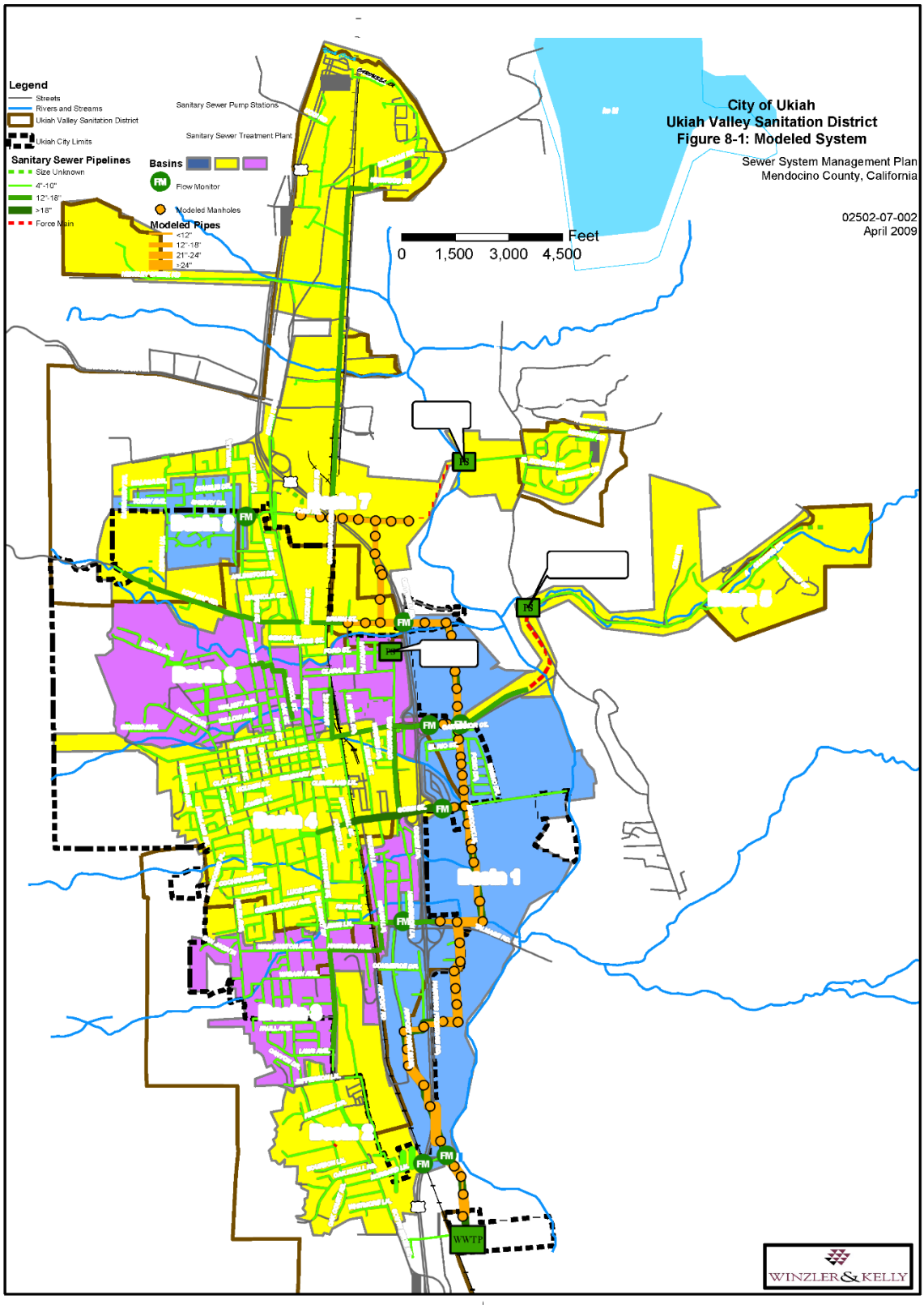


Figure 5. Sanitary Sewer System Modeled System

8.3 DESIGN CRITERIA

Through the modeling efforts described in this element, the City and District have identified the need to conduct further wet weather flow monitoring in order to better characterize hydraulic deficiencies in the collection system. Specific design criteria will be established following that future analysis. In the interim, certain design criteria are available to the City and District for design and planning purposes. These criteria include geometric and hydraulic design elements such as pipe sizes, materials, and alignment, material coefficient, and ratios for hydraulic capacity. These criteria are discussed below and in SSMP Element 5.

8.3.1 Pipe Material Coefficient

Pipe capacities depend on many factors including slope, pipe roughness, and the pipe shape. The Continuity equation and the Manning equation for steady-state flow are used to calculate flow in a sewer pipe. The Manning coefficient 'n' is a friction coefficient and varies with respect to pipe material, size of pipe, depth of flow, smoothness of pipe and joints, and extent of root intrusion. For sewer pipes, the Manning coefficient typically ranges between 0.011 and 0.017, with 0.013 being a representative value used for collection system master planning. A coefficient of 0.013 is used for pipelines of various materials and the full range of ages in the City's collection system.

Other pipe capacity factors are dependent on system geometry (i.e., slope, pipe diameter). These factors are described in the draft Standards of Practice included in Appendix D.

8.3.2 d/D Ratio

The design capacity of a pipeline is often determined by a set ratio of the design flow depth "d" to the pipeline diameter "D" or "d/D." When designing gravity sewer pipelines, it is common practice to set flow depth criteria by the size of the pipeline. Design d/D ratios typically range from 0.5 to 0.9. The maximum capacity of gravity sewers occurs at a d/D ratio of about 0.9, but using 0.7 provides a safety factor for the potential buildup of solids before scheduled maintenance can occur, regardless of the pipe diameter.

Although a d/D ratio of 0.7 may be appropriate for new and future sewers, applying this maximum ratio to existing sewers may lead to an increased number of improvements that may not necessarily be needed. For this reason, existing sewers will be considered adequate if they flow at a d/D of 0.9 (essentially full) or less and deficient if the flows exceed the 0.9 ratio. Exceeding the 0.9 ratio would indicate the pipeline is likely to surcharge. Capacity improvements identified for pipelines marginally exceeding the 0.9 ratio and in generally good structural condition will be considered a lower priority than projects where the d/D ratio exceeds 0.9 by a large margin.

8.4 PRIORITIZATION OF CORRECTIVE ACTIONS

The City and District have identified the need for additional flow monitoring, condition assessment, and hydraulic modeling for wet weather flows to provide a basis for the Sewer System Master Plan and for additional short- and long-term CIP schedules. The findings from condition assessments and capacity assessments are used to prioritize corrective actions,

consistent with the 2022 SSS WDR. This prioritization considers both the severity of the consequences associated with potential spills and the specific conditions under which hydraulic deficiencies occur.

Existing capacity concerns are prioritized over future potential concerns, as they present a more immediate risk of system failure and discharge. Among these concerns, those that occur during average dry weather flow conditions are assigned the highest priority, as they indicate a consistent and ongoing capacity limitation. Capacity issues observed under peak dry weather conditions are given a moderate priority, while those occurring only under peak wet weather conditions are considered a lower priority, reflecting their association with less frequent, storm events.

This approach ensures that the most critical and spill-prone deficiencies are addressed first, effectively reducing the risk of spills and protecting water quality and public health.

8.5 CAPITAL IMPROVEMENT PLAN

The 2022 SSS WDR requires the capital improvement plan to include the following items:

- Project schedules including completion dates for all portions of the capital improvement program;
- Internal and external project funding sources for each project; and
- Joint coordination between operation and maintenance staff, and Engineering staff/consultants during planning, design, and construction of capital improvement projects; and Interagency coordination with other impacted utility agencies.

The City maintains a budget document, breaking down allocated money for capital improvement projects posted on the City's website at: https://cityofukiah.com/finance/

The City and District approve their annual budgets in June for the following fiscal year. The annual public utilities budget for the sewer utility provides financial support for sewer administration, construction and maintenance, City/District sewer services, and sewer CIP projects. The City's wastewater division budget for 2026 is available on the City's website (https://stories.opengov.com/ukiahca/published/AELPs0MVCK). Projections for 2027 and 2028 are also provided.

Currently, the City and District prioritize rehabilitation and replacement (R&R) projects based on historical sewer back-ups, visual inspection, and the age of the sanitary sewer collection system. Starting in 2016, the City has conducted an aggressive R&R Program with eight major projects that replaced over 27,800 lineal feet of sewer mains and 471 sewer laterals along the respective sewer main segments. Current projects, scheduled through the end of FY 2025-2026, include water main replacements throughout the City which are to be performed in conjunction with street improvement projects ($1,500,000), replacing the 16-inch steel water and sewer main from PZ1 to Bush Street ($1,500,000) and upgrading the Vichy Springs lift station ($400,000). The estimated CIP cost includes all project costs such as planning, design, construction, and construction management.

Funding for projects comes from City and District sewer service charges and sanitary sewer connection fees. These charges and fees are defined in the City's and District's wastewater ordinances. The Director of Water Resources and Water/Sewer Maintenance Supervisor are responsible for submitting budget proposals to the City Council for approval. Similarly, the District Manager is responsible for submitting budget proposals to the District Board of Directors. With an established fiscal year budget, the Director and Supervisor authorize short-term funding for standard operating and maintenance costs and emergency repairs. Similarly, the District manager authorizes capital expenditures for District projects.

An integral part of the R&R plan includes sewer collection system maintenance and condition assessment projects. These projects will often identify deficiencies and problem areas within the collection system and will lead towards future R&R or other CIP projects. The City will continue to maintain its collection system and make improvements based on deficiencies identified through additional condition assessment projects.

9 MONITORING, MEASUREMENT AND PROGRAM MODIFICATIONS

Element 9 discusses how the City and District monitor implementation of SSMP elements and measure the effectiveness of these elements in reducing spills. Effectiveness is measured by developing and tracking performance indicators on a regular basis. The indicators should provide data on how effective the City and District have been in meeting their collection system management goals. This section also discusses how the City and District keep the SSMP current.

9.1 REGULATORY REQUIREMENTS FOR MONITORING, MEASUREMENT AND PROGRAM MODIFICATIONS

The regulatory requirements for the Monitoring, Measurement, and Program Modifications element of the SSMP are summarized as follows:

a) Maintaining relevant information, including audit findings, to establish and prioritize appropriate Plan activities;
b) Monitoring the implementation and measuring the effectiveness of each Plan Element;
c) Assessing the success of the preventive operation and maintenance activities;
d) Updating Plan procedures and activities, as appropriate, based on results of monitoring and performance evaluations; and
e) Identifying and illustrating spill trends, including spill frequency, locations and estimated volumes.

9.2 MONITORING, MEASUREMENT AND PROGRAM MODIFICATIONS DISCUSSION

9.2.1 Compliance Summary

The City's collection system inspection and condition assessment is discussed in more detail in SSMP Element 4, Section 4.3.1. The City tracks the location and cause of all spills, blockages, and gravity main hot-spots and tracks all cleaning activities in iWorq, for both its collection system

and the District's collection system. In addition to pipe metrics (size, age, etc.), iWorq details the location of each pipe cleaned and any relevant remarks observed during the cleaning. Records for cleaning schedules and maintenance repairs are kept and updated electronically.

The City initiated a system-wide CCTV)inspection of the sewer system (City and District system) in 2006. As of 2011, one hundred percent of the collection system has been inspected using CCTV. The Water/Sewer Maintenance Supervisor reviews the videos to determine if each is of useful quality and files the results in a binder in his office, which is accessible to the operations crew. Additionally, City field staff observes all gravity mains and manholes during routine cleaning and conducts localized video inspections when their observations warrant further investigation. Condition assessments are performed concurrent with manhole and CCTV inspection and documented in iWorq, the City's CMMS software.

Individuals using the City's tracking and CCTV systems are trained and retrained regularly, depending on when and where the training is offered. Training opportunities include those offered by CUES, and the continuing education unit (CEU) training to maintain operator certifications. Likewise, all inspection equipment is maintained on a regular maintenance schedule.

With the adoption of District Ordinance No. 1 in 1958, City Ordinance City Ordinance No. 1111 in October 2008, and District Ordinance No. 28 in December 2006, the City and District have the authority to permit, inspect and enforce the maintenance of FOG-control devices (e.g., grease interceptors); these ordinances prohibit the release of any objectionable waste into the sewer. See Element 3 and Element 7of the SSMP for more information. This process is part of the City's routine annual preventative operation and maintenance inspection and cleaning schedule. Maintenance is also conducted when potential problem areas are discovered through inspections. Beyond this, sewer pipes that are prone to FOG accumulation or blockages are given high priority, monitored, maintained, and cleaned at least once a month. In addition, all spills are reported to the California Integrated Water Quality System (CIWQS).

9.2.2 Performance Measures

A number of performance indicators are tracked to evaluate the long-term effectiveness of the elements described in this SSMP and for reporting to the State and Regional Water Boards in the annual spill report for both the City and the District. Some of these indicators could be expected to relate directly to specific elements or operations and maintenance activities, whereas others relate to multiple activities or program effectiveness, as a whole. For example, it may be possible to correlate the number of blockages attributed to roots with the total annual footage of sewer lines subject to activities as part of the preventive maintenance program (see SSMP Element 4.2.2). In contrast, the volume of spills reaching surface waters would more likely reflect multiple maintenance activities, emergency response times, the Sewer Pipe Blockage Control Program, and even uncontrollable factors. In measuring an outcome that is characterized by a relatively small number of events (e.g., number of annual wet weather spills), it is important to recognize that statistical variability may dominate short-term trends and that true causal relationships are likely to be evident only over the long term.

The following list shows the quantitative indicators that are currently tracked or those planned to be tracked.

- Location of all spills over the past 12 months;
- Number of spills over the past 12 months, distinguishing between dry weather spills and wet weather spills;
- Volume distribution of spills (e.g., number of spills less than 100 gallons, 100- to 999 gallons, 1,000- to 9,999 gallons, more than 10,000 gallons);
- Volume of spills that was contained in relation to total volume of spills;
- Spills by cause (e.g., roots, FOG, debris, pipe failure, pump station failure, capacity, other);
- Number of spills over the past 12 months;
- Stoppages by cause;
- Number of grease interceptors inspected over the past 12 months;
- Percentage of grease interceptors inspected over the past 12 months; Miles of gravity mains cleaned over the past 12 months;
- Percentage of total gravity mains cleaned over the past 12 months;
- Percentage of wet wells cleaned over the past 6 months.

9.2.3 Baseline Performances

In order to track the progress of the City and District efforts to reduce spills and – by extension – the effectiveness of the SSMP, it is helpful to establish a baseline from which to draw comparisons. The following tables establish that baseline and provide a summary of the spills since the initial development and implementation of the SSMP until 2024.

Table 5. City of Ukiah Spills, Annual Totals (All volumes in gallons)

Year	Number of Spills	Total Volume	Total Volume Recorder	Spill Cause
2007	2	175	60	Debris, Roots
2008	8	2,188	768	Debris, Roots, FOG, Pump Station Failure, Pipe Structural Problem/Failure
2009	6	730	710	Debris, Roots
2010	2	105	105	Debris, Roots
2011	2	260	237	Debris, Roots
2012	3	280	200	Debris
2013	2	90	90	FOG

Year	Number of Spills	Total Volume	Total Volume Recorder	Spill Cause
2014	0	--	--	--
2015	2	50	50	Debris, Roots
2016	3	369	369	Debris, Roots
2017	1	20	20	Roots
2018	1	880	880	Debris
2019-2022	0	--	--	--
2023	1	36	30	Debris
2024	0	--	--	--

Table 6. UVSD Spills, Annual Totals (all volumes in gallons)

Year	Number of Spills	Total Volume	Total Volume Recorder	Spill Cause
2007	1	750	300	Debris
2008	1	200	200	FOG
2009	1	800	350	Main Blockage
2010	0	--	--	--
2011	1	50	50	Sewer Plug left by Contractor
2012-2017	0	--	--	--
2018	1	62	56	Debris
2019-2023	0	--	--	--
2024	1	44,800	44,000	FOG, Roots

9.3 FUTURE PROGRAM IMPROVEMENTS

Element 10 of the SSMP serves to record the evolution of the SSMP elements. Per SSS WDR requirements, the entire SSMP is to be audited at least once every three (3) years, which is the current audit plan for the City and the District. The following is a summary of accomplishments and identified potential future program improvements relative to this element.

The City is aware of the typical causes of spills in the collection system (i.e., debris, roots, grease) and as shown in Section 9.2, significant improvements have been made with regards to the

number of spills since the initial development and implementation of the City's SSMP. Further, preventative maintenance activities are well established, including cleaning schedules for problem areas within the service area.

It is the City and District intent that the SSMP remain a living document and that it be regularly updated to reflect program or organizational changes, new regulatory requirements, facility improvements, and other changing conditions. Methods to ensure this objective is met include:

- The City Director of Water Resources assumes the overall responsibility for maintaining and updating the SSMP. The District will also provide input and make recommendations for the SSMP. This involves input and coordination with the City's Engineering, Collection System, and Operations and Maintenance groups and with the District. If conditions or higher-level priorities warrant, an outside consultant may be engaged, at the direction of the Director or designee, to update the Plan;
- A number of the activities described in the SSMP reflect ongoing programs for which the review and update process is well established. Examples include preventive maintenance measures, staff training, outreach, inspection, and testing;
- The 2022 SSS WDR requires periodic auditing of the SSMP. This will elevate maintenance of the SSMP to a mandatory status on par with other regulatory requirements; and
- The 2022 SSS WDR requires that the SSMP be updated every six (6) years. Updates will be conducted more frequently if warranted through significant changes in the supporting documents for the program elements.

10 SSMP AUDITS

Element 10 presents the City and District's auditing program. This section describes how the City and District will evaluate the effectiveness of the SSMP to identify updates or modifications which may be needed to maintain the plan's usefulness.

10.1 REGULATORY REQUIREMENTS FOR SSMP AUDITS

The regulatory requirements for SSMP Program Audit element of the SSMP are summarized as follows:

a) Evaluate the implementation and effectiveness of the Enrollee's Sewer System Management Plan in preventing spills;
b) At a minimum, these audits must occur once every three (3) years; and
c) The audit shall focus on evaluating the effectiveness of the SSMP and the City's compliance with the SSMP requirements, including identification of any deficiencies in the SSMP and steps to correct them.

10.2 SSMP PROGRAM AUDITS

Per the 2022 SSS WDR, SSMP program audits are to be conducted on a three-year basis. The audit team may be comprised of individuals outside the Public Works Department, including other City departments, outside agencies, consultants, and/or contractors and District staff. The scope of the audit will cover each of the major sections of the SSMP including:

- Evaluating the implementation and effectiveness of the SSMP in preventing spills;
- Evaluating the Enrollee's compliance with the 2022 SSS WDR;
- Identifying SSMP deficiencies in addressing ongoing spills and discharges to waters of the State; and
- Identifying necessary modifications to the SSMP to correct deficiencies.

After the SSMP Audit has been completed, the Legally Responsible Official (LRO) submits the Audit Report to the online CIWQS Sanitary Sewer System Database within six (6) months of the end of the required three-year audit period. More details on the schedule for SSMP audits and updates are included in Section 1.3 of the SSMP.

The audit report will include audit findings and recommended corrective actions, a statement that operators' input on the audit findings has been considered, and a proposed schedule for the City and District to address the identified deficiencies. SSMP audit records will be maintained to assist during SSMP updates as these will further outline deficiencies and recommendations to ensure the City's SSMP is compliant with the requirements stipulated under the 2022 SSS WDR.

The City and District will determine the need to update the SSMP based on the results of the audit, as well as the performance of its wastewater collection system based on information collected for Element 9 of the SSMP. The audits will assist the City in establishing and prioritizing SSMP improvement efforts. If the City and District decide that an update is warranted, then the process to complete the update will be established.

11 COMMUNICATION PROGRAM

This section of the Sewer System Management Plan (SSMP) discusses the communication strategies used by the City and District. The District's facilities are satellite facilities to the City's and the two agencies cooperate to facilitate communication with the general public.

11.1 REGULATORY REQUIREMENTS FOR COMMUNICATION PROGRAM

The SSS WDR requirements for the SSMP Communication Program element of the SSMP are summarized as follows:

a) The City and District shall communicate on regular basis with the public on:
    i. Spills and discharges resulting in closures of public areas, or that enter a source of drinking water, and
    ii. the development, implementation, and performance of its SSMP. The communication system shall provide the public the opportunity to provide input to the City and District as the program is developed and implemented.
b) The City and District shall communicate on regular basis with Owners/operators of systems that connect into the Enrollee's system, including satellite systems, for:
    i. System operation, maintenance, and capital improvement-related activities.

11.2 COMMUNICATION PROGRAM DISCUSSION

One goal of the SSMP is to minimize the number and impact of spills. For a number of reasons, including a past legal settlement, the City and District have been actively implementing several programs geared towards public education and outreach to accomplish this goal. This section summarizes communication and outreach utilized by the City and the District, progressive programs and techniques that have been implemented by small to large cities and districts throughout the state and across the country, and provides recommendations for communication program elements to implement in the future.

11.2.1 Stakeholder Groups

There are various stakeholder groups for the sanitary sewer collection system that have been identified for current and future outreach and communication efforts. It is the intent of the SSMP process to collaborate with these stakeholder groups on potentially controversial issues. This approach allows the public to embrace the SSMP and reach towards a shared goal with the City. A list of stakeholders is presented in **Table 7** below.

Table 7. Stakeholder Groups

Stakeholder Group	Potential Issues of Interest
Domestic Ratepayers and Local Neighborhood Associations	Proposed rate increases, Sewer Pipe Blockage Control Program, local impacts from capital programs
Satellite Agencies	Master planning, capacity issues, emergency response plans, capital programs
Food Service Establishments	Sewer Pipe Blockage Control Program
Industrial Dischargers	Legal authority, design standards
Developers and Developer Associations	Master planning, capacity issues, legal authority, design standards, proposed fee increases
Contractors	Capital programs, proposed contracting of maintenance activities
Engineering Consultants	Design standards, capital programs, consulting opportunities
Other City or County Departments such as Building or Environmental Management	Sewer Pipe Blockage Control Program, design standards, emergency response plans
Governing Boards or Councils	SSMP progress, costs, public impacts, communication program
Environmental Groups	Emergency response plans, overall SSMP, SSMP program audits
Regulators	Emergency response plans, SSMP program audits

11.2.1.1 Domestic Ratepayers and Local Neighborhood Associations

The primary stakeholders in many SSMPs are the domestic users. These are typically the residential ratepayers but can also include neighborhood and homeowner associations. Any

proposed rate increase resulting from operations and maintenance budgeting (including the Sewer Pipe Blockage Control Program) and capital improvement costs will raise interest by this group. Communicating to this group the importance of the increase can provide support and help. Communication of the SSMP, City/District planning processes, and outreach for specific topics (i.e., Sewer Pipe Blockage Control Program or spills) can include a variety of approaches. In general, providing multiple resources is a good approach. Information for the Sewer Pipe Blockage Control Program, lateral repairs, and past and current planning efforts are currently available at Department of Public Works and on the City's website (www.cityofukiah.com), which is described later in this plan element. Any information provided by the District is also posted on the City's website. Future outreach activities will include discussion at public meetings, as well as mailers, handouts, and various community activities (i.e., community events, youth sports, school activities).

In a similar manner, the City maintains communication with the public regarding spills and discharges resulting in closures of public areas by placing signs in affected areas and through implementation of Nixle, which provides the public with emergency alerts and notifications.

11.2.1.2 Satellite Agencies

The City owns, operates, and maintains a sewer collection system within its corporate limits and operates and maintains the collection system owned by the District. The District's collection system serves both unincorporated areas of Mendocino County and portions of the City that were annexed in the last 30 years. The City and the District have four joint meetings throughout each year where they review operation and maintenance procedures. The City and District collaborate on the status and performance of the SSMP, at a minimum, through the SSMP Audits (Element 10), and also as specific capital improvement projects and associated budgets warrant discussion.

Communication is important between the City and District regarding similar policies such as grease ordinances and in carrying out procedures contained in the Spill Emergency Response Plan (SERP) included in SSMP Element 6.

11.2.1.3 Non-Domestic Establishments

The key component of communication and outreach to commercial facilities, such as FSEs, is to identify "hot spots" where FOG and other illicit discharges are considered a problem if conveyed to the collection system. All FSEs are required by the City and District grease ordinances to impose control measures and practices to prevent pipe-blocking substances from entering the collection system.

11.2.1.4 Developers, Developer Associations, Contractors, and Engineering Consultants

The City's and District's primary outreach and communication strategy for this group is the City's website and in information available at City Hall and the District offices. The City regularly updates its website to provide a convenient resource for the District's and City's sewer policies, standards, and procedures. The City's sanitary sewer standard plans are discussed in SSMP Element 3 and Element 5 .

Communication is important between City departments and District regarding information for developers and developer associates, as these stakeholder groups often require services by multiple departments through the planning, design, and construction phases of a project. Interoffice staff coordination and web-based resources are currently used for communication between departments and will continue to be used in the future.

11.2.1.5 Other City and County Departments

As noted above, it is important for the District and the City's Public Works Department to communicate with other City and County departments, especially regarding its SERP (SSMP Element 6). Response to a spill may require resources outside of the Public Works Department, both at the City and County levels. Communication is also important regarding design standards, as residential and commercial development activities typically require the services of multiple departments for the processing of various permits.

11.2.1.6 Governing Boards and Councils

The City Council and District Board will remain informed as to the progress of the SSMP development and future audit process through discussion between staff, consultants, and the public at regular public meetings. These meetings will provide a forum for discussion of costs, public impacts, and effectiveness of the communication and outreach elements of the SSMP.

11.2.1.7 Environmental Groups and Regulators

The primary activity for the City to communicate the SSMP to these stakeholders is the audit process. As discussed in SSMP Element 10 – SSMP Audits, the SSMP will be audited every three (3) years, with interim reviews conducted, as appropriate or needed. SSMP updates and recertification are required every six (6) years. Through the ongoing audit and review process, the City and District will communicate its overall compliance for the SSMP process to local and state regulators, including the SERP. Local and regional environmental groups can stay informed as to the status of the City's SSMP document through communication with the City and on the City's website.

11.2.2 Website and Media

Website and media outreach is currently limited to the City's website and information available at City Hall. The public can find information at these locations regarding updates on the City's SSMP and on sewer policies, standards, and procedures. The SSMP is made available to the public online (www.cityofukiah.com) and at the City of Ukiah Civic Center at 300 Seminary Ave.

11.2.3 Regional Associations

The City is a member of the RRWA. The group develops and implements regional projects and programs focused on the areas of water quality and regulations, integrated resources and planning, and public outreach and funding. RRWA promotes a program that encourages the public to keep FOG out of the sewers. In addition, RRWA has prepared an outreach fact sheet titled "Good Plumbing Practices" to notify plumbing contractors about the potential impact of their work on public sanitary sewer system. The City and District promote these practices through use of the City's website.

APPENDIX

City of Ukiah and Ukiah Valley Sanitation District SSMP

Appendix A: List of Abbreviations and Definitions

Appendix B: List of Ordinances

Appendix C: Operation and Maintenance Attachments

Appendix D: Standards of Operation and Sewer Lateral Testing Program

Appendix E: Fats, Oils, and Grease Program Attachments

Appendix F: Spill Emergency Response Plan (August 2025)

APPENDIX A

List of Abbreviations and Definitions

List of Abbreviations and Definitions

BMP	Best Management Practices; Refers to the procedures employed in commercial kitchens to minimize the quantity of grease that is discharged to the sanitary sewer system. Examples include scraping food scraps into a garbage can and dry wiping dishes and utensils prior to washing.
BOD	Biochemical Oxygen Demand
CAL/OSHA	California Division of Occupational Safety and Health
CIP	Capital Improvement Plan; Refers to the document that identifies future capital improvements to the City's sanitary sewer system.
CDFG	California Department of Fish and Game
City	City of Ukiah
CCTV	Closed Circuit Television; Refers to the State Water Resources Control Board online electronic reporting system that is used to report SSOs, certify completion of the SSMP, and provide information on the sanitary sewer system.
COD	Chemical Oxygen Demand
CWEA	California Water Environment Association
UVSD or District	Ukiah Valley Sanitation District
EPA	Environmental Protection Agency
FOG	Fats, Oils, and Grease; Refers to fats, oils, and grease typically associated with food preparation and cooking activities that can cause blockages in the sanitary sewer system.
FSE	Food Service Establishment; Refers to commercial or industrial facilities where food is handled/prepared/served that discharge to the sanitary sewer system.
GIS	Geographical Information System; Refers to the City's system that is used to capture, store, analyze, and manage geospatial data associated with the City's sanitary sewer and storm drainage system assets.
GPS	Global Positioning System; Refers to the handheld unit that is recommended to determine the longitude and latitude of sanitary sewer overflows for use in meeting CIWQS reporting requirements.
gpm	gallons per minute
I&I	Infiltration and Inflow refers to water that enters the sanitary sewer system from storm water and groundwater and increases the quantity of flow in the collection system. Infiltration enters through defects in the sanitary sewer system after flowing through the soil. Inflow enters the sanitary sewer without flowing through the soil. Typical points of inflow are holes in manhole lids and direct connections to the sanitary sewer (e.g., storm drains, area drains, and roof leaders)
Lateral	Refers to the piping that conveys sewage from a building to the District or City sewer system.
mgd	million gallons per day
NASSCO	National Association of Sewer Service Companies
NPDES	National Pollutant Discharge Elimination System

O&M	Operation and Maintenance
OES	Office of Emergency Services
OSHA	Occupational Safety and Health Administration
PACP	Pipeline Assessment and Certification Program
POTW	Publicly Owned Treatment Works
PM	Preventative Maintenance; Refers to maintenance activities intended to prevent failures of the sanitary sewer system facilities (e.g., cleaning, CCTV, repair)
R&R	Rehabilitation and Replacement
RRWA	Russian River Watershed Association
RWQCB	Regional Water Quality Control Board
SCADA	Supervisory Control and Data Acquisition
SOP	Standard Operating Procedure; Standards of Practice
SERP	Spill Emergency Response Plan
SSO/Spill	Sanitary Sewer Overflow; Refers to the overflow or discharge of any quantity of partially treated or untreated wastewater from the sanitary sewer system at any point upstream of the wastewater treatment plant. SSOs are typically caused by blockages, pipe failure, pump station failure, or capacity limitation.
SWRCB	State Water Resources Control Board
TM	Technical Memorandum
WDR	Waste Discharge Requirements
WWTP	Wastewater Treatment Plant

APPENDIX B

List of City of Ukiah and Ukiah Valley Sanitation District Ordinances

List of Ordinances

Note:
The City of Ukiah Municipal Code is available at: https://www.codepublishing.com/CA/Ukiah/
The Ukiah Valley Sanitation District Ordinances are available at: www.uvsd.org/ordinances

Ordinance No. 1	An ordinance adopted by the Ukiah Valley Sanitation District on December 16, 1958 establishing the District's authority within its boundaries to regulate sewage disposal in public and private systems, maintain those systems, promulgate connection and lateral requirements, promulgate public sewer construction requirements, oversee uses of its sewer facilities, establish fees and service charges, issue permits, and carry out enforcement.
Ordinance No. 12	An ordinance adopted by the Ukiah Valley Sanitation District on November 2, 2005, building upon Ordinance No. 1 to serve as the District's Wastewater Ordinance.
Ordinance No. 28	An ordinance adopted by the Ukiah Valley Sanitation District on December 14, 2006, establishing a grease interceptor/trap policy for areas within the District and not within the jurisdictional boundary of the City of Ukiah.
Ordinance No. 30	An ordinance adopted by the Ukiah Valley Sanitation District on January 30, 2008, to facilitate the proper maintenance of private sewer laterals.
Ordinance No. 845	An ordinance adopted by the City of Ukiah in 1985 providing rules and regulations for the use and construction of sanitary sewer facilities installed, altered and repaired within the City.
Ordinance No. 1059	An ordinance adopted by the City of Ukiah in 2004 to regulate the generation of grease interceptor waste.
Ordinance No. 1105	An ordinance adopted by the City of Ukiah on February 6, 2008, to facilitate the proper maintenance of private sewer laterals.
Ordinance No. 1111	An ordinance, also known as the Grease Ordinance, adopted by the City of Ukiah on October 1, 2008, builds upon Ordinance No. 1059 by providing framework for the review, permitting, construction, inspection, and ongoing maintenance of facilities that create and discharge FOG into the public sewer system.
Ordinance No. 1114	An ordinance, also known as the Grease Interceptor Waste Ordinance, adopted by the City of Ukiah on April 1, 2009, to remove the City/District overlap area from the City's jurisdiction.

SSMP APPENDIX C

Operations and Maintenance Attachments

Sewer Lateral Maintenance List
Parts Inventory
Inspection Forms
Sewer Lateral Grant Program
RRWA Good Plumbing Practices Fact Sheet

City of Ukiah
Sewer System Management Plan
Sewer Maintenance List

ID	MH	Location	Length (ft)
1	South State	Skate City North to Firecrest 500'+	1,054
2	South State	1649 South State North to End 255'	235
3	Rosemary Lane	Canyon South to End 500'	244
4	Rosemary Lane	Canyon Road North 280'	297
5	South Dora Street	Laws South to Canyon 280'	348
6	Thompson Street	MH @ 119 Thompson 300'	261
7	Tedford Ave.	South Dora West to next MH 150'	672
8	Apartment Line	Laws North to Tedford 480'	141
9	Old Tire Shop	MH in corner West to Apartment 480'	269
10	Old Tire Shop	MH in corner South to Laws 500'	269
11	Laws Ave	Faull West to 216 Laws 200'	557
12	Laws Ave.	Faull North 200'	269
13	Dora St. @ Washington	South East MH North 150'	325
14	South State @ Washington	North to end 550'	202
15	Helen Ave	Observatory South to CO	137
16	Alice @ Luce	North to Cochrane 310'	96
18	Gardens	Mendocino south to End 350'	185
19	Gardens	Mendocino North 325'	102
20	Mendocino Pl.	Mendocino South to end 300'	183
21	Mutt Hut	Gobbi @ State South 450'	398
22	Curves for Women	Gobbi @ State North 600'+	767
23	Foster Freeze	Gobbi @ State South 600'	413
24	McCarty Manor	Gobbi South to End 480'	223
25	McPeak	McPeak West to Eastlick 350' Keep Press < 1300	135
26	Clay St.	Clay @ Thompson West 350'	1,112
27	Clay St.	Clay @ Thompson North 500'	200
28	Clay St.	Clay @ Oak West 250'	1,112
29	Church St.	School @ Church West 250'	868
30	Perkins St.	Oak @ Perkins West 450'	1,115
31	Bush St.	440 N. Bush North to Walnut 150'	162
32	Dora Ave.	711 Dora Ave. West 350'	569
33	Dora Ave.	640 Dora Ave. West 450'	569
34	Standley Ave.	Standley @ Barnes West 300'	1,478
35	N. School	Patrona's enter C/O 250' N	65
36	N. School and Henry	Cheesecake Momma 200' South	185
37	Willow St.	Dora @ Willow West 250'	484
38	North State St.	State @ Scott South to end 600'	248
39	North State St.	1060 N. State @ Comcast West 300'	105
40	North State St.	640 N. State North to End 550'	381
41	Ford Street	Ford to Evans 265'	99
42	Ford Street	Railroad West to State 350'	293
43	Orchard Ave.	Orchard @ Clara West 280'	160
44	Orchard Ave.	Orchard @ Clara North to end 450'	99
45	Orchard Ave.	Orchard @ Ross N. to Clara 600'	463
46	Orchard Ave.	Orchard @ Perkins N. Full Run 600'+	463
47	Main St.	MH at 307 Main St. North to CO	252
48	Mason St.	Norton St. to Perkins St.	425
49	Mason St.	MH at 206 Mason West to MH at 307 Main 550'	338
50	Mason St.	Mason @ Norton West to State 375'	230

City of Ukiah
Sewer System Management Plan
Sewer Maintenance List

ID	MH	Location	Length (ft)
51	Denny's	Pomeroy @ Perkins South to End 350'	238
52	Yosemite	Oak Manor @ Yosemite West 200'	271
53	North Oak	904 North Oak West to end 200'	76
54	North Oak	Oak @ Cypress North to end 220'	267
55	Low Gap Truck Stop	Low Gap to Oak 280' Check MH Clean as needed	521
56	Feed Lot Lane	MH behind Apartments North 150'	44
57	Zinfandel Apartments	140 Zinfandel North to end 300'	116
58	Despina	Despina @ Zinfandel South 550'	538
59	Chablis	Bush @ Chablis West 425'	747
60	Empire	Empire @ Irvington South to End 550'	204
61	Empire	Empire @ Irvington West 475'	174
62	Henderson Lane	Talmage @ Henderson N. Full Run 600'	252
63	Orchard Ave.	Ford and Orchard Lift Station	n/a
64	El Dorado	El Dorado Lift Station	n/a
65	Vichy Springs	Vichy Springs Lift Station	n/a

SEWER MAINTENANCE LIST (as of July 2025)

MANHOLE	LOCATION		DATE/ COMMENTS
SO. STATE	SKATE CITY NORTH TO FIRCREST 500' +		_____
SO. STATE	1649 SO. STATE NORTH TO END 255'		_____
ROSEMARY	CANYON SOUTH TO END 500'		_____
ROSEMARY	CANYON NORTH 280'		_____
SO. DORA	LAWS SO. TO CANYON 280'		_____
THOMPSON	MH @ 119 Thompson 300'		_____
TEDFORD	SO. DORA WEST TO NEXT M.H	150'	_____
APARTMENT LINE	LAWS NORTH TO TEDFORD 480'		_____
OLD TIRE SHOP	M.H. IN CORNER WEST TO APARTMENT 480'		_____
OLD TIRE SHOP	M.H. IN CORNER SOUTH TO LAWS	500'	_____
LAWS AVE.	FAULL WEST TO 216 LAWS	200,	_____
LAWS AVE.	FAULL NORTH 200'		_____
DORA @ WASHINGTON	SOUTH EAST M.H. NORTH 150'		_____
SO. STATE @ WASHINGTON	NORTH TO END 550'		_____
HELEN AVE.	OBSERVATORY SO. TO C.O.	325'	_____
ALICE @ LUCE	NORTH TO COCHRANE	310'	_____
Thomas at at S. State	West to Observatory	90'	_____
GARDENS	MENDOCINO SOUTH TO END	350'	_____
	MENDOCINO NORTH	325'	_____
MENDOCINO PL.	MENDOCINO SOUTH TO END	300'	_____
			_____
CURVES FOR WOMEN	GOBBI @ STATE NORTH 600' +		_____
McPEAK	McPEAK WEST TO EASTLICK KEEP PRESSURE BELOW 1300 POSSIBLE HOLE IN PIPE	350'	_____

PAGE TWO

CHURCH ST.	SCHOOL @ CHURCH WEST 250'	_____
PERKINS ST.	OAK @ PERKINS WEST 450'	**Run @ 700 PSI first 150 ft**
BUSH ST.	440 N. BUSH NORTH TO WALNUT 150'	_____
DORA AVE.	711 DORA AVE. WEST 350'	_____
	793 DORA AVE CONTACT- CONNIE SHORT-209-352-6341 BEFORE RUNNING LINE	
	640 DORA AVE. WEST 450'	_____
STANDLEY AVE.	STANDLEY @ BARNES WEST 300'	_____
N. SCHOOL	PATORNA'S ENTER C/O 250' NORTH	_____
N.SCHOOL AND HENRY	CHEESE CAKE MAMMA 200' SOUTH	**PIG PETERSON"S LAW OFFICE**
WILLOW ST.	DORA @ WILLOW WEST 250'	_____
NORTH STATE ST.	STATE @ SCOTT SOUTH TO E ND 600'	_____
NORTH STATE ST.	1060 N. STATE @ COMCAST WEST 300'	_____
	640 N. STATE NORTH TO END 550'	_____
FORD STREET	FORD TO EVENS 265'	_____
	RAILROAD WEST TO STATE 350'	_____
ORCHARD AVE.	ORCHARD @ CLARA NORTH TO END 450'	_____
	ORCHARD @ ROSS N. TO CLARA 600'	_____
	ORCHARD @ PERKINS N. FULL RUN 600' +	_____
		_____
Main St	NortonSt to Perkins St	_____
Mason St	MH At 206 Mason St West To MH At 307 Main St 550'	_____
Mason St	MASON @ NORTON WEST TO STATE 375'	_____
MASON ST.	200 MASON WEST TO 307 MAIN 350'	_____
		_____

PAGE THREE

DENNYS	POMEROY @ PERKINS SOUTH TO MH 198'	DO NOT EXCEED PASS MANHOLE! HOLE IN PIPE
YOSEMITE	OAK MANOR @ YOSEMITE WEST 200'	
NORTHOAK	904 NORTH OAK WEST TO END 200'	CONTACT SUZAN BEFORE RUNNING LINE 707-621-1532
	OAK @ CYPRESS NORTH TO END 220'	
LOW GAP	LOW GAP TO OAK 280'	
TRUCK STOP	CHECK M.H.	CLEAN AS NEEDED
FEEDLOT LN	M.H. BEHIND APARTMENTS NORTH 150'	
ZINFANDALE APARTMENTS	140 ZINFANDEL NORTH TO END 300'	
CHABLIS	BUSH @ CHABLIS WEST 425'	
EMPIRE	EMPIRE @ IRVINGTON SOUTH TO END 550' EMPIRE @ IRVINGTON WEST 475'	
HENDERSON LN	TALMAGE @ HENDERSON N. FULL RUN 600'	
ORCHARD AVE	FORD AND ORCHARD LIFT STATION	
EL DORADO	ELDORADO LIFT STATION	
VICHY SPRINGS	VICHY SPRINGS LIFT STATION	
WHITMORE LN	MH1132 to C/O 361 **(Roots)**	
	MH1133 to MH1132 **(Roots)**	
	MH1132 to C/O 166 **(Roots)**	
SIDNIE CT	Entire Street	
MILL/OAK	ROOT CUT FROM WEST MILL CT TO OAK ON MILL PULL SEWER CLEANOUT CAP AT 690 WEST MILL 417 WEST MILL NOTIFY LAUREN WANTLAND 707- 468-5629	
S Dora/ Fircrest (Pressure Cap)		MH 1098 Run to end of line

water

INVENTORY-Sewer

July 8, 2025

Item	Description	Qty On Hand
1-AC-4	Adapter 4" PVC SDR35, Female, slip x thread	5
1-CI-64	Coupling, Increaser PVC 6" x 4" GxS	3
1-CI-84	Coupling, Increaser PVC 8" x 4" GxS	2
1-CI-86	Coupling, Increaser PVC 8" x 6" GxS	0
1-CO-4	Cleanout Plug, Threaded SDR 35 4"- OLD 1-CP-4	8
1-CO-4-2	Cleanout 2 Way Solvent Weld SDR 35 4"- OLD 1-C-4	7
1-CP-10A-P	Coupling, Sewer Flex, 10" AC/DI -10" CI/PL Mission #MR51 1010 ARC- OLD 1-CP-395	2
1-CP-10C-P	Coupling, Sewer Flex, 10" Clay -10" CI/PL Mission #MR02 1010 ARC- OLD 1-CP-391	2
1-CP-10COP	Coupling, Sewer Flex, 10" CONC -10" CI/PL Mission #MR06 1010 ARC	-2
1-CP-12C-P	Coupling, Sewer Flex, 12" Clay -12" CI/PL Mission #MR02 1212 ARC- OLD 1-CP-392	-1
1-CP-4	Coupling, PVC SDR35 Sewer 4", Repair	1
1-CP-4AC-P	Coupling, Sewer Flex, 4" AC - PVC OR CI Mission #MR-51-44-ARC- OLD 1-CP-366-B	22
1-CP-4CL-P	Coupling, Sewer Flex, 4" Clay-PVC or CI #MR02-44-ARC - OLD 1-CP-366-A	10
1-CP-4CO-P	Coupling, Sewer Flex, 4" Concrete CI or PVC - OLD 1-CP-366-D	8
1-CP-4P-P	Coupling, Sewer Flex, 4" PVC-PVC MIS5644ARC	8
1-CP-4S	Coupling, PVC SDR35 Sewer 4", Lined w/Stop	2
1-CP-6	Coupling, PVC Sewer 6", w/Stop	1
1-CP-6-1	Coupling, PVC Sewer 6", No Stop	1
1-CP-6AC-P	Coupling, Sewer Flex, 6" AC-PVC or DI-CI- OLD 1-CP-367-A	15
1-CP-6CL-P	Mission #MR02-66-ARC- OLD 1-CP-367-B, MIS0266ARC..	11
1-CP-6CO-P	Coupling, Sewer Flex, 6" w/SS band Concrete-PVC #MR06-66-ARC (No Fernco) - OLD 1-CP-367-D	3
1-CP-6P-P	Coupling, Sewer Flex, 6" PVC-PVC or CI-CI- OLD 1-CP-367-C, (NO FERNCO)	8
1-CP-8A-P	Coupling, Sewer Flex, 8" AC/DI -8" CI/PL Mission #MR51 88 ARC- OLD 1-CP-394	3
1-CP-8CL-P	Coupling, Sewer Flex, 8" Clay -8" CI/PL Mission #MR02 88 ARC- OLD 1-CP-390..	5
1-CP-8CO-P	Coupling, Sewer Flex, 8" w/ss Band Concrete-CI or PVC- (No Fernco)- OLD 1-CP-368	-3
1-CP-8P-P	Coupling, Sewer Flex, 8" PVC-PVC or CI-CI W/SS band, Mission - NO FERNCO	4
1-CV-G5	Cover, Sewer Steel G5 8" (Traffic)	8

water

INVENTORY-Sewer

July 8, 2025

Item	Description	Qty On Hand
1-EL-4-1	Elbow, PVC Sewer 4" 45 degree S x G	0
1-EL-4-2	Elbow, PVC Sewer 4" 22 1/2 GxG - OLD 1-E-73	34
1-EL-4-3	Elbow, PVC Sewer 4" 22 1/2 SXG- OLD 1-E-73-A	6
1-EL-4-4	Elbow, PVC Sewer 4" 45 degree GxG - OLD 1-E-73-B	2
1-EL-4-5	Elbow, PVC Sewer 4" 90 degree SxG -OLD 1-E-73-E	14
1-EL-4-6	Elbow, PVC Sewer 4" 90 degree GxG	13
1-EL-6-0	Elbow, PVC Sewer 6" 11 1/4" GxG	3
1-EL-6-1	Elbow, PVC Sewer 6" 45 degree GxG OLD 1-E-6-1	1
1-EL-6-2	Elbow, PVC Sewer 6" 22 1/2 GxG- OLD 1-E-6-2	0
1-EL-6-3	Elbow, PVC Sewer 6" 45 degree G x S - OLD 1-E-7	-3
1-EL-6-4	Elbow, PVC Sewer 6" 22 1/2 degree G x S	0
1-LMT-6X4T	LMT Saddle Kit; 6" x 4" Tee, (1 saddle & 1 paint stick)	15
1-LMT-6X4Y	LMT Saddle kit; 6" x 4" Wye (1 saddle & 1 paint stick)	0
1-LMT-A1	LMT Adhesive cartridge	72
1-M-3-A1-5	Manhole, Grade Ring, Adjustable 24" x 1-1/2", Ladtech	1
1-M-3-A2	Manhole, Grade Ring, Adjustable 24" x 2", Ladtech	3
1-M-3-A4	Manhole, Grade Ring, Adjustable 24" x 4", Ladtech	3
1-M-3-SR	Manhole, Grade Ring, Sloped 3/4" - 1-1/2, Ladtech	4
1-M-8	Manhole, C.I. Frame & Lid "Sanitary Sewer"	3
1-P-100	Pipe, PVC 8" SDR35	20
1-P-110	Pipe, PVC 10" SDR35	20
1-P-120	Pipe, PVC 12" SDR35	20
1-P-98	Pipe, Sewer PVC 4" SDR35	44
1-P-99	Pipe, Sewer PVC 6" SDR35	48
1-PM-4	Plug, Mechanical 4"	15
1-PM-6	Plug, Mechanical 6"	3
1-PVC-4	Plug, PVC Sewer, 4"	1
1-PVC-6	Plug, PVC Sewer 6"	4

water

INVENTORY-Sewer

July 8, 2025

Item	Description	Qty On Hand
1-R-4	4 x 4 SWR x DMV Reducer hub	3
1-SD-71	SADDLE, SEWER 6.27-14.40 4" SS GASKET -OLD 1-S-71	0
1-SD-72	SADDLE, SEWER 6.27-14.40 6" SS, GASKET	-1
1-SW-40	Sweep, PVC 4" for SDR35, 45 degree plain ends (male ends)	4
1-SW-49	Sweep, PVC 4"-36" 90 degree SxS	1
1-SW-60	Sweep, PVC 6" for SDR35, 45 degree plain ends (male ends)	9
1-SW-69	Sweep, PVC 6"-36" 90 degree SxS	-1
1-WY-4	Wye, PVC Sewer 4" 45 degree GxGxG - OLD 1-Y-1	4
1-WY-6	Wye, PVC Sewer 6" GxGxG	3
1-WY-64	Wye, PVC Sewer 6" x 4" GxGxG - OLD 1-Y-1-A, PSFGY64	11
1-WY-84	Wye, PVC Sewer 8" x 4" GxGxG	3
AC-10-M	Accessory Kit 10" MJ Megalug for C900 - TUFF GRIPS	4
AC-12-M	Accessory Kit 12" MJ Megalug for C900 - TUFF GRIPS	-4
AC-4-M	Accessory Kit 4" MJ Restraint Megalug for C900 - TUFF GRIPS	3
AC-6-M	Accessory Kit 6" MJ Megalug for C900 - TUFF GRIPS	0
AC-8-M	Accessory Kit 8" MJ MEGALUG for C900 - TUFF GRIPS	6
AD-18	Adapter, Coupler PJ Straight 1" CTS X MIP, Ford #C84-44 -OLD A-18	5
AD-19	Adapter, Coupler PJ Straight 1" CTS X FIP, Ford C14-44 - OLD A-19	6
AD-21-A	Adapter, Coupler PJ Straight 1-1/2" CTS X FIP, Ford #C14-66 - OLD A-21-A	2
AD-21-B	Adapter, Coupler PJ Straight Quick Joint 1-1/2" CTS X MIP, Ford #C14-66-Q, reorder per Don 1/31/13 - OLD A-21-B	7
AD-21-C	Adapter, Coupler PJ Straight 1-1/2" CTS X MIP, Ford #C84-66 - OLD A-21-C	2
AD-23	Adapter, Coupler, Pack Joint Straight 2" CTS X MIP, Ford #C84-77	0
AD-23-A	Adapter, Coupler PJ Straight 2" CTS X FIP, Ford #C14-77 - OLD A-23-A	5
AD-23-B	Adapter, Coupler PJ Straight Quick Joint 2" CTS X FIP, Ford #C14-77-Q - OLD A-23-B	5
AD-4-A	Adapter, 4" Flg x MJ	3
AD-6	Adapter, 6" Flg x MJ	4
AD-7	Adapter, Coupler PJ Straight 3/4" CTS X FIP, Ford #C14-33 - OLD A-7..	1

water

INVENTORY-Sewer

July 8, 2025

Item	Description	Qty On Hand
AD-8	Adapter, Coupler PJ Straight 3/4" CTS X MIP, Ford #C84-33 - OLD A-8	13
AD-80	Adapter, Metal-PVC (Sch 80), Transition Female Soc x Fipt, 3/4" Spears #835-007BR- OLD A-80	71
AD-81	Adapter, Metal-PVC (Sch 80), Transition Female Soc x Fipt, 1" Spears #835-010BR- OLD A-81....	20
B-223-A	Bushing, Brass 2" x 1"	7
B-224	Bushing, Brass 1" x 3/4"	4
B-225	Bushing, Brass 2" x 3/4"	15
B-227	Bushing, Brass 1 1/2" x 1"	3
B-228	Bushing, Brass 1-1/2 x 2"	-2
BS-F-1	Bolt Set, Flange, 6" Solid	17
BS-F-2	Bolt Set, Flange, 4"	5
BS-F-3	Bolt Set, Flange, 8"	8
BS-F-4	Bolt Set, Flange, 10"	5
BS-F-5	Bolt Set, Flange, 12"	4
BS-F-6	Bolt Set, Flange, 16"	6
BS-H-1	Bolt set, Hydrant, 6" hollow	6
BS-S-1	Bolt set, Hydrant, 6" solid	0
BX-12W	Box, Concrete B-12, 12"x 20" - OLD B-12	12
BX-16	Box, Concrete B-16, 12" x 22 1/4" - OLD B-16	11
BX-24	Box, Water Concrete B24, 20 3/8" x 19 1/2"- OLD B-24	1
BX-30	Box, Concrete B30, 13 1/4" x 24"	3
BX-36	Box, Concrete B-36, 17 1/4" x 30"	3
BX-G5	Box, Traffic Valve Concrete G-5	11
CA-10	Cap, Fire Hydrant 4 1/2" Brass	4
CA-5	Cap, Fire Hydrant 2 1/2" Brass	2
CA-6	Cap Fire Hydrant 2 1/2" Cast Iron	2
CL- 1-C	Clamp, Stainless Steel Wrap, 3/4" CU, Ford #FLSC-088-3R	7

water

INVENTORY-Sewer

July 8, 2025

Item	Description	Qty On Hand
CL- 1-S	Clamp, Stainless Steel Wrap, 3/4" Steel, Ford #FLSC-105-3R	22
CL- 2-C	Clamp, Stainless Steel Wrap, 1" CU, Ford #FLSC-113-3R	5
CL- 2-S	Clamp, Stainless Steel Wrap, 1" Steel, Ford #FLSC-132-3R	6
CL- 3-C	Clamp, Stainless Steel Wrap, 1-1/2" CU, Ford #FLSC-1625-3R	8
CL- 3-S	Clamp, Stainless Steel Wrap, 1-1/2" Steel, Ford #FLSC-190-3R	3
CL- 4-C	Clamp, Stainless Steel Wrap, 2" CU, Ford #FLSC-213-3R	2
CL- 4-S	Clamp, Stainless Steel Wrap, 2" Steel, Ford #FLSC-2389-3R	2
CL- 400	Clamp, Full Circle Repair 4" x 6", 3.95-4.20, Romac #SS1-4.20x6"..	2
CL- 401	Clamp, Full Circle Repair 4" x 8", 2" IPT 3.95 tp 4.20 (Romac #SS1-4.20x6" x 2" IP)	1
CL- 402	Clamp, Full Circle Repair 4" x 12", 3.95 tp 4.20 (Romac #SS1-4.20 x 12)	1
CL- 403	Clamp, Full Circle Repair 4" x 12", 4.45 to 4.85 (Romac #SS1-4.85 x 12)	2
CL- 404	Clamp, Full Circle Repair 4" x 12", 2" IPT, 4.74 to 5.14 (Romac #SS1-5.14 x 12" x 2" IP, Ford #FS1-5.14-12)	3
CL- 405	Clamp, Full Circle Repair 4" x 12", 2" IPT, 4.95 to 5.35 (Romac #SS1-5.35 x 12" x 2" IP, Ford #FS1-435-12.5-IP7)	2
CL- 406	Clamp, Full Circle Repair 4" x 12", 4.95 to 5.35 (Romac #SS1-5.35 x 12", Ford #FS1-435-12.5)	2
CL- 407	Clamp, Full Circle Repair 4" x 12", 2" IPT 4.45-4.85	1
CL- 600	Clamp, Full Circle Repair 6" x 7.5", 5.95 to 6.35(Romac #SS1-6.35 x 6", Ford #FS1-636-6)	3
CL- 601	Clamp, Full Circle Repair 6" x 12.5", 5.95 to 6.35 (Romac #SS1-6.35 x 12, Ford #FS1-635-12.5)	4
CL- 602	Clamp, Full Circle Repair 6" x 8", 6.60 to 7.00 (Romac #SS1-7.00 x 8)	1
CL- 603	Clamp, Full Circle Repair 6" x 12", 6.60 to 7.00 (Romac #SS1-7.00 x 12")	2
CL- 604	Clamp, Full Circle Repair 6" x 8", 6.84 to 7.24 (Romac #SS1-7.24 x 8", Ford #FS1-724x 8")	0
CL- 605	Clamp, Full Circle Repair 6" x 12", 6.84 to 7.24 (Romac #SS1-7.24 x 12")	3
CL- 606	Clamp, Full Circle Repair 6" x 12", 2" IPT 6.84 to 7.24 (Romac #SS1-7.24 x 12" x 2" IP, Ford # FS1-724-125-IP7)	2

water

INVENTORY-Sewer

July 8, 2025

Item	Description	Qty On Hand
CL- 607	Clamp, Full Circle Repair 6" x 12.5", 6.84 to 7.24 (Ford # FS1-724-12.5")	2
CL- 608	Clamp, Full Circle Repair 6" x 12", 2" IPT 6.84 to 7.64 (Romac #SS1-7.64 x 12")	1
CL- 609	Clamp, Full Circle Repair 6" x 12, 2" IPT 7.40-7.80	1
CL- 610	Clamp, Full Circle Repair 6" x 12" Long Rg: 7.40- 7.80	2
CL- 800	Clamp, Full Circle Repair 8" X 12.5", 7.95 to 8.35 (Romac #SS1-8.35x12", Ford #FS1-835 x 12.5"), RMCSS183512	2
CL- 801	Clamp, Full Circle Repair 8" X 16", 7.95 to 8.35 (Romac #SS1-8.35 x 16", Ford #FS1-835 x 15")	3
CL- 802	Clamp, Full Circle Repair 8" X 8", 8.54 to 8.94 (Ford #FS1-894 x 8")	2
CL- 803	Clamp, Full Circle Repair 8" X 12.5", 1" IP, 8.75 to 9.15 (Smith-Blair #239-086312-008)	0
CL- 804	Clamp, Full Circle Repair 8" X 8", 8.99 to 9.39 (Ford #FS1-939 x 8")	3
CL- 805	Clamp, Full Circle Repair 8" X 12, 2" IPT, 8.99 to 9.39 (Ford #FS1-939 x 12.5-IP7)	1
CL- 806	Clamp, Full Circle Repair 8" x 12", 9.27 to 9.67 (Ford #FS1-967 x 12.5")	1
CL- 807	Clamp, Full Circle Repair 8" x 12.5", 2" IPT, 9.00 to 9.40 (Romac #SS1-9.40 x 12")	0
CL- 808	Clamp, Full Circle Repair 8" x 12.5", 2" IPT 8.99 to 9.79 (Smith-Blair #227-090512-001)	2
CL- 809	Clamp, Full Circle Repair 8" x 12", 2" IP, 9.30 to 9.70 (Romac #SS1-9.70 x 12" x 2"IP)	2
CL- 810	Clamp, Full Circle Repair 8" x 6", 7.95 to 8.35 (Romac #SS1-835-6) or X 8" (Ford #FSI-835-8)	0
CL-1000	Clamp, Full Circle Repair 10" x 12", 9.70 to 10.10 (Ford #FS1-1010 x 12.5")	2
CL-1001	Clamp, Full Circle Repair 10" x 12", 9.70 to 10.30 (Power Seal #3110-10A x 12) ..	1
CL-1002	Clamp, Full Circle Repair 10" x 12", 10.70 to 11.10 (Romac #SS1-11.10 x 12")	1
CL-1003	Clamp, Full Circle Repair 10" x 7.5", 11.75 to 12.15 (Ford #FS1-1215 x 7.5")	2
CL-1004	Clamp, Full Circle Repair 10" x 10", 11.75 to 12.15 (Ford #FS1-1215 x 10")	2
CL-1005	Clamp, Full Circle Repair 10" x 10", 2" IPT, 11.75 to 12.15 (Ford #FS1-1215 x 10-IP7)	1
CL-1006	Clamp, Full Circle Repair 10" x 12.5", 11.75 to 12.15 (Ford #FS1-1215 x 12.5")	1
CL-1007	Clamp, Full Circle Repair 10" x 20", 2" IPT, 11.75 to 12.15 (Ford #FS1-1215 -20-IP7)	1
CL-1008	Clamp, Full Circle Repair 10" x 6", 11.85 to 12.25 (Romac #SS1-12.25x 6")	2
CL-1009	Clamp, Full Circle Repair 10" x 12", 11.85 to 12.25 (Romac #SS1-12.25 x 12")	1

water

INVENTORY-Sewer

July 8, 2025

Item	Description	Qty On Hand
CL-1010	Clamp, Full Circle Repair 10" x 16", 2" IPT, 11.60 to 12.40 (Power Seal #3122-10G x16 x 2"IP)	2
CL-1200	Clamp, Full Circle Repair 12" x 12.5", 13.14 to 14.34 (Smith-Blair #227-132015-001)	1
CL-1201	Clamp, Full Circle Repair 12" x 15", 1" IPT, 13.20 to 14.20 (Smith-Blair #227-132015-051 x 1"IP)	1
CL-1203	Clamp, Full Circle Repair 10" x 20", 1" IPT, 13.20 to 14.20 (Smith-Blair #227-132020-051 x 2"IP)	1
CL-1204	Clamp, Full Circle Repair 12" x 24", 13.65 to 14.85 (Smith-Blair #239, Power Seal #3122AS)	1
CL-1205	Clamp, Full Circle Repair 12" x 24", 2" IP, 13.65 to 14.85 (Power Seal #3122AS, Smith-Blair #239)	1
CL-1600	Clamp, Full Circle Repair 16" x 10", 15.92 to 16.67 (Power Seal #3122AS-16a x 10 SS Bolts, S-B #228-20159210.001)	1
CL-1601	Clamp, Full Circle Repair 16" x 16", 15.92 to 16.67 (Power Seal #3122-16A x 16 SS Bolts, Smith-Blair #228-20159215.001)	1
CL-1602	Clamp, Full Circle Repair 16" x 36", 15.92 to 16.67 (Power Seal #3122-16A x 36 SS Bolts, Smith-Blair #228-20159236.001)	2
CO-30-A	Conn, Ball Valve Branch Assy, 7 1/2" x 1" CTS x 5/8" Meter Swivel Nut, Ford #UVB43-42W	7
CO-M	Cover, C.I. Monument Christy G5C	0
CP-10R-BLK	Coupling, 10"- Ring (Red 10.0, Gasket #FC2AG-1000 & Black 11.10 -11.40, Gasket #FC2AG-1110-1140) Ford #FC2A-L12	2
CP-12-BLK	Coupling, 12" Ring (Black 12.0 Gasket #FC2AG-1200, Black 13.20-13.50 Gasket #FC2AG-1320-1350) Ford #FC2W-L12 -	2
CP-315-A	Coupler, Pack Joint Straight 3/4 CTS X CTS, Ford #C44-33	38
CP-316	Coupler, Pack Joint Straight 1", CTS X CTS, Ford #C44-44	31
CP-415	Coupling, Flex, 6", Barrel & 5 bolts only, Power Seal - ORDER NEW	4
CP-434-A	Coupler, Pack Joint Straight 1 1/2 CTS X CTS, Ford #C44-66	2
CP-434-B	Coupler, Pack Joint Straight 2" CTS X CTS, Ford #C44-77	5

water

INVENTORY-Sewer

July 8, 2025

Item	Description	Qty On Hand
CP-B-1	Coupler, Brass, 3/4"	6
CP-B-2	Coupler, Brass, 1"	5
CPF-1	Coupling, Flex, 1" Std. Steel- OLD CP-389	2
CPF-1.5	Coupling, Flex, 1 1/2" Std Steel- OLD CP-396	1
CPF-10-ER	Coupling, Flex, 10", Extended Range, Ford #FC2W-10-L12- OLD CP-424-ER	4
CPF-12-ER	Coupling, Flex, 12", Extended Range, Ford #FC2W-12-L12- OLD CP-426-ER	1
CPF-16-ER	Coupling, Flex, 16", Extended Range, Ford #FC2W-16-L12 - OLD CP-427-ER..	2
CPF-2	Coupling, Flex, 2" Std. Steel- OLD CP-401	2
CPF-4-BW	Coupling, Flex, 4",(White 4.00-4.13 & Blue 4.5-4.85) PowerSeal #3501 (4/12)-old CP-404-BW	3
CPF-4-ER	Coupling, Flex, 4", Extended Range, Ford #FC2W-4-L12- OLD CP-404-ER	4
CPF-6-BW	Coupling, Flex, 6", (rg- White 6.00 to 6.14, Blue 6.62 to 6.95) Power Seal #3501- OLD CP-415-BW	4
CPF-6-ER	Coupling, Flex, 6", Extended Range, Ford #FC2W-6-L12	14
CPF-8-BW	Coupling, Flex, 8", Rg (White 8.00-8.16, Blue 8.62 -9.05), Power Seal 3501 - OLD CP-422-BW	2
CPF-8-ER	Coupling, Flex, 8", Extended Range, Ford #FC2W-8-L12- OLD CP-422-ER	10
CPJ-1	Connection, Pack Joint, for CTS OD Tubing & Female Copper Flare Thread	8
CPJ-2	Connection, Pack Joint, for CTS OD Tubing & Female Copper Flare Thread- 1"	3
CV-12R	Cover, Water Concrete w/Steel Reading Lid for B-12- OLD CV-452	30
CV-12R-ST	Cover, Steel w/reading lid for B-12 Box Christy #B12-61G TRAFFIC	-2
CV-16R	Cover, Water Concrete B-16G w/C.I. Reading Lid- OLD CV-460-A	4
CV-16R-ST	Cover, Water Steel w/Reading Lid for B-16	-3
CV-24R	Cover, Water Concrete w/reading Lid for B-24- OLD CV-464	1
CV-24R-ST	Cover, Water Steel w/Reading Lid for B-24- OLD CV-454	0
CV-30R	Cover, Water Concrete B-30 w/Reading Lid- OLD CV-450-B	4
CV-30R-ST	Cover, Water Steel, For B30 Box-w/Reader Lid B30-61G	-1
CV-36R	Cover, Water Concrete B36 w/Reading Lid	3

water

INVENTORY-Sewer

July 8, 2025

Item	Description	Qty On Hand
CV-36R-ST	Cover, Water Steel, For B36 Box-w/Reader Lid B36-61G	-1
CV-B9-C	Cover, Water Concrete B9D- OLD CV-456	24
CV-B9X	Cover. Water Steel B9 & B9X- OLD CV-455	3
CV-B9X-C	Cover, Water Concrete B9XD..	-29
CV-G5	Cover, Water Steel G5 8" (Traffic)- OLD CV-448-A	7
EL-1-S	Elbow, Brass Street, 90 deg, 3/4"	2
EL-100	Elbow, Pack Joint 1" CTS X CTS, Ford #L44-44- OLD E-2	2
EL-150	Elbow, Pack Joint 1 1/2" CTS X CTS, Ford #L44-66- OLD E-33	3
EL-2-S	Elbow, Brass Street, 90 deg, 1"	-1
EL-200	Elbow, Pack Joint 2" CTS X CTS, Ford #L44-77 - Keep no more than 4- OLD E-34	3
EL-3-S	Elbow, Brass Street, 45 deg, 3/4"	4
EL-34	Elbow, Pack Joint 3/4" CTS X CTS, Ford #L44-33- OLD E-1	5
EL-4-S	Elbow, Brass Street, 45 deg, 1"	2
El-40	Elbow, C.I. 11 1/4" CL350, 4"	0
EL-400	Elbow, 4" MJ X MJ, 11.25 deg, DI- OLD E-400	7
EL-410	Elbow, 4" MJ X MJ, 22.5 deg, DI - OLD E-410	0
EL-420	Elbow, 4" MJ X FLG, 22.5 deg, DI - OLD E-420	2
EL-430	Elbow, 4" MJ X FLG, 45 deg, DI - OLD E-430	0
EL-440	Elbow, 4" FLG X FLG, 45 deg, DI - OLD E-440..	1
EL-450	Elbow, 4" MJ X MJ, 45 deg, DI - OLD E-450..	0
EL-460	Elbow, 4" FLG X MJ, 90 deg, DI - OLD E-460	4
EL-470	Elbow, 4" FLG X FLG, 90 deg, DI -OLD E-470	0
EL-600	Elbow, 6" MJ x MJ, 11.25 deg, DI - OLD E-600	8
EL-601	Elbow, 6" MJ X FLG, 11.25 deg, DI - OLD E-601	-1
EL-602	Elbow, 6" FLG X FLG, 11.25 deg, DI - OLD E-602	3
EL-610	Elbow, 6" FLG x FLG, 22.5 deg, DI - OLD E-610	1
EL-620	Elbow, 6" MJ x FLG, 22.5 deg, DI - OLD E-620	2
EL-630	Elbow, 6" MJ x MJ, 22.5 deg, DI - OLD E-630	-5

water

INVENTORY-Sewer

July 8, 2025

Item	Description	Qty On Hand
EL-640	Elbow, 6" MJ x Flg, 45 deg, DI - OLD E-640	1
EL-650	Elbow, 6" Flg x Flg, 45 deg, DI - OLD E-650I	1
EL-660	Elbow, 6" MJ X MJ, 45 deg, DI - OLD E-660	4
EL-670	Elbow, 6" FLG X FLG, 90 deg, DI	2
EL-800	Elbow, 8" MJ X MJ, 11.25 deg, DI - OLD E-800	1
EL-810	Elbow, 8" FLG X FLG, 22.5 deg, DI- OLD E-810	1
EL-820	Elbow, 8" MJ X FLG, 22.5 deg, DI - OLD E-820	1
EL-830	Elbow, 8" MJ X MJ 22.5 deg, DI - OLD E-830	3
EL-840	Elbow, 8" MJ X FLG 45 deg, DI - OLD E-840	1
EL-850	Elbow, 8" MJ X MJ 45 deg, DI	4
EL-860	Elbow, 8" FLG X FLG, 45 deg, DI - OLD E-860	4
EL-B-1	Elbow, Brass, 90 deg, 3/4"	-1
EL-B-2	Elbow, Brass, 90 deg, 1"	1
EL-B-3	Elbow, Brass, 45 deg, 3/4"	1
EL-B-4	Elbow, Brass, 45 deg, 1"	1
EX-93-A	Extension, Hydrant Spool 3"	0
EX-94	Extension, Hydrant Spool 6"	2
EX-94-B	Extension, Hydrant Breakoff 6"	1
EX-95	Extension, Hydrant Spool 8"	1
EX-96	Extension, Hydrant Break-off Riser 6 x 12"	2
EX-97	EXTENSION, HYDRANT SPOOL 18"	1
EX-98	Extension, Hydrant Spool 24"	2
F-1	Nut, Flare, 3/4" CU, Ford #CTN-3	3
F-2	Nut, Flare, 1" CU, Ford #CTN-4	50
F-3	Nut, Flare, 1-1/2" CU, Ford #CTN-6	5
F-4	Nut, Flare, 2" CU, Ford #CTN-7	3
FL-15-F	Flange, Meter 1 1/2" x 1 1/2" FIP, Ford #CF-31-66	4
FL-15-M	Flange, Meter 1 1/2" x 1 1/2" MIP, Ford #CF38-66-2	3

water

INVENTORY-Sewer

July 8, 2025

Item	Description	Qty On Hand
FL-2-F	Flange, Meter 2" x 2" FIP, Ford #CF31-77	2
FL-2-M	Flange, Meter bronze 2" x 2" MIP, Ford #CF38-77-2.125	2
GA-10-RFF	Gasket, Flange 10" Rubber-Full Face	3
GA-12-RFF	Gasket, Flange 12" Rubber-Full Face	4
GA-15	Gasket., Flg Meter 1 1/2"	-1
GA-16-RFF	Gasket, Flange 16" Rubber-Full Face	4
GA-20	Gasket, Meter Flange 2"	9
GA-4-RFF	Gasket, Flange 4" Rubber-Full Face- OLD G-1..	13
GA-50-RFF	Gasket, Hydrant, Rubber-Full Face - OLD GA-50	7
GA-6-RFF	Gasket, Flange 6" Rubber-Full Face - OLD G-2	12
GA-6-RR	Gasket 6" Rubber ring for gate valves - OLD GA-11	7
GA-8-RFF	Gasket, Flange 8" Rubber-Full Face - OLD G-3....	5
H-30-F	Hydrant Bury Section 30" X 6, Flg X Flg..	-1
H-42	Hydrant Valve 4" Rubber	20
H-50	Hydrant Head #76	0
H-51	Hydrant Bury Section, 42" x 6", Flg X MJ	0
H-52	Hydrant Bury Section, 36" x 6", Flg X MJ	2
H-53	HYDRANT BURY SECTION 30" X 6", FLG X MJ..	1
M-60	Meter, Water 3/4" - with 9" lay length	-1
M-61	Meter, Water 1", Badger Model 70	-5
M-61-ULT	METER, ULTRASONIC, 1.00" E-SERIES G2 ULTRASONIC METER, BRONZE, US ..GAL, 5' TT CONNECTOR, MUST BE IN GALLONS.	19
M-62	Meter, Water 1 1/2", Model 120	2
M-624-ULT	6" X 24" BRONZE E-SERIES G2 ULTRASONIC 5521.72 1..METER W/TP, US GAL, 6' NICOR CONNECTOR, BADGER METER	1
M-63	Meter, Water 2" M170 Bronze Body w/L Conn...	17
M-65-ULT	METER, ULTRASONIC, 3/4" X 7-1/2" E-SERIES G2 ULTRASONIC METER,..BRONZE, US GAL, 5' TT CONNECTOR, MUST BE IN GALLONS.	80

water

INVENTORY-Sewer

July 8, 2025

Item	Description	Qty On Hand
M-66-SM	METER, SMART, SPECTRUM 30D 5/8" X 3/4" METER WITH VN INTEGRATED CELLULAR REGISTER AND ENDPOINT, METRON FARNIER.	0
M-66-ULT	METER ULTRASONIC, 1-1/2" E-SERIES ULTRASONIC METER, 2-BOLT ELLIPTICAL FLANGE, SS HOUSING, US GAL, 5' TT..CONNECTOR, MUST BE IN GALLONS	-1
M-67-ULT	METER ULTRASONIC, 2".00 E-SERIES SS, 2-BOLT ELLIPTICAL FLANGE, SS HOUSING, US GAL, 5' TT CONNECTOR, MUST BE IN GALLONS..	4
M-C	Meter Coupler 3/4 x 1-1/2, Ford #C38-23-1.5	27
M-C-1	Meter Coupler 3/4 x 2, Ford #C38-23-2	28
M-C-2	Meter Coupler 3/4 X 2 1/4, Ford #C38-23.2.25	6
M-C-3	Meter Coupler 3/4 x 2 1/2, Ford #C38-23-2.5	13
M-C-4	Meter Coupler 3/4 x 3, Ford #C38-23-3	3
M-C-5	Meter Coupler 1 x 2, Ford #C38-44-2.625	18
N-136	Nipple, Brass 3/4" x 1-1/2"	6
N-138	Nipple, Brass 3/4" x 2"	-2
N-139	Nipple, Brass 3/4" x 2-1/2"	-1
N-140	Nipple, Brass 3/4" x Close	-2
N-141	Nipple, Brass 3/4" x 3"	-1
N-142	Nipple, Brass 3/4" x 3 1/2"	2
N-143	Nipple, Brass 3/4" x 4"	-1
N-144	Nipple, Brass 3/4" x 4 1/2"	2
N-145	Nipple, Brass 3/4' x 5"	2
N-146	Nipple, Brass 3/4" x 5 1/2"	3
N-147	Nipple, Brass 3/4" x 6"	3
N-148	Nipple, Brass 1" x CL	2
N-149	Nipple, Brass 1" x 2"	10
N-151	Nipple, Brass 1" x 2-1/2"	3
N-156	Nipple, Brass 1" x 3"	2
N-157	Nipple, Brass 1" x 3 1/2"	4

water

INVENTORY-Sewer

July 8, 2025

Item	Description	Qty On Hand
N-158	Nipple, Brass 1" x 4"	4
N-159	Nipple, Brass 1" x 4 1/2"	6
N-160	Nipple, Brass 1" x 5"	5
N-161	Nipple, Brass 1" x 5 1/2"	3
N-162	Nipple, Brass 1" x 6"	5
N-166-A	Nozzle, Hydrant #76 Rich 4 1/2"	5
N-166-B	Nipple, Hydrant 4 1/2" Old Style	1
P-10	Pipe, Water PVC 10" CL150 C900	20
P-73	Pipe, Water PVC 4" CL150 C900	0
P-74	Pipe, Water PVC 6" CL 150 C900	60
P-77	Pipe, Water PVC 8" CL150C900	29
P-89	Pipe, Water PVC 12" CL150 C900	20
P-TB-1	Plug, Threaded, Brass, 3/4"	-5
P-TB-2	Plug, Threaded, Brass, 1"	1
P-TB-3	Plug, Threaded, Brass, 1-1/4"	3
P-TB-4	Plug, Threaded, Brass, 1-1/2"	3
P-TB-5	Plug, Threaded, Brass, 2"	1
PL-4	PADLOCK, MASTERLOCK # 5KAMK, KEY: J354, SYSTEM: SM865, LARGE LOCK	208
PL-4-LS	PADLOCK, MASTERLOCK # 5KAMKLJ, KEY: J354, SYSTEM: SM865, LARGE LOCK-LONG SHANK	24
PL-4-S	PADLOCK, MASTERLOCK # 1KAMK, KEY: J354, SYSTEM: SM865, SMALL LOCK	42
PL-4-S-LS	PADLOCK, MASTERLOCK # 1KAMKLJ, KEY: J354, SYSTEM: SM865, SMALL LOCK-LONG SHANK	24
R-45	Resetter, 3/4" x 7", Ford #V42-7W..	7
R-46	Resetter, 3/4" x 12", Ford #V42-12W	5
R-49	Resetter, 1" x 10", Ford #V44-10W	4
R-50	Resetter, 1" x 12", Ford #V44-12W..	0
R-62	Rod, Hydrant Extension 18"	7

water

INVENTORY-Sewer

July 8, 2025

Item	Description	Qty On Hand
RC-1	Reducing Coupler, Brass 1" x 3/4"	4
RE-64	Reducer 6" FLG x 4" MJ	1
SA-232	Angle Stop CTS x Meter Swivel Nut 1" x 3/4", FORBA43342WNL..	-2
SA-233	Angle Stop FIP X Meter Swivel Nut 1", Ford #BA13-444W - OLD S-233	5
SA-234	Angle Stop FIP x Meter Swivel Nut 3/4", Ford #BA13-332W- OLD S-234	9
SA-234-A	Angle Stop CTS X Meter Swivel Nut 3/4", Ford #BA43332W or Jones #JE1963WF - OLD S-234-A	18
SA-235	Angle Stop CTS x Meter Swivel Nut 1", Ford #BA43-444W - OLD S-235	4
SA-236	Angle Stop CTS X Meter Flange 1 1/2", Ford #BFA43-666W-NL - OLD S-236	0
SA-237	Angle Stop CTS X Meter Flange 2", Ford #BFA43-777W NL	2
SBC-227-A	Ballcorp MIP X FIP 3/4", Ford #FB1700-3 - OLD S-227-A	10
SBC-231	Ballcorp Pack Joint MIP X CTS 3/4", Ford #FB1100-3	3
SBC-239	Ballcorp Pack Joint MIP X CTS 1", Ford #FB100-4 - OLD S-239	-5
SBC-241	Ballcorp Pack Joint MIP X CTS 1 1/2", Ford #FB1100-6 - OLD S-241	1
SBC-242	Ballcorp Pack Joint MIP X CTS 2", Ford #FB100-7 - OLD S-242	-1
SBC-245	Ballcorp, Stop, MIP x FIP, 1", Ford #FB1600-4, Muller #B20045 - OLD S-245	5
SC-227	Curb Stop FIP X FIP 3/4", Ford #B11-333W -OLD S-227, Ford Only...	18
SC-229	Curb Stop FIP X FIP 1", Ford #B11-444W - OLD S-229	19
SD-101	Saddle, Tapping 10.11 -11.10, 2" IP(Smith-Blair #314-121214-000)	3
SD-111	Saddle, Tapping 11.10-12.12, 2" IP (Romac #202N-1212 x 2" IP) - OLD S-64-B	1
SD-112	Saddle, Tapping 10.75-11.10- 2" IP for C900 (Ford #S91-1007 Style C)	1
SD-121	Saddle, Tapping 12.00-13.20- 2" IP (Romac #202N-12.75 x 2" IP) -OLD S-66	3
SD-131	Saddle, Tapping 13.20-14.38, 2" IP (Romac #202N-14.38 x 2" IP) - OLD S-67	2
SD-132	Saddle, Tapping 13.20, 2" IP FOR C900 (Ford #FC202-1320-IP7) - OLD S-68	0
SD-14	Saddle, Tapping 4" 3.45-4.05 2" IPT (Romac #202N-405 x 2" IP) - OLD S-14	1
SD-150	Saddle, Tapping 15.30-16.80 2" IP (Romac #202N-16.80 x 2" IP) - OLD S-71	2
SD-16	Saddle, Tapping 4" 4.50-5.40 2" IPT (Romac #202N--5.40 x 2" IP)	-1
SD-170	Saddle, Tapping 17.40-18.90 -2" IP (Romac #202N-18.90 x 2" IP) - OLD S-73-A	1

water

INVENTORY-Sewer

July 8, 2025

Item	Description	Qty On Hand
SD-171	Saddle, Tapping 17.40-2" IP for C900 (Ford #FC202-1740-IP7) - OLD S-73-B	1
SD-19	Saddle, Tapperseal 6.00-6.63 2" IP (Romac #202N-6.63-2IP) - OLD S-19	0
SD-40	Saddle, 4.80, 3/4" IP for C900 (Ford #S91-403 Style A) - OLD S-40	4
SD-41	Saddle 4.80, 1" IP for C900 (Ford #S91-404 Style A)	4
SD-42	Saddle 4.80-5.10 2" IP for C900 (Ford #S91-407 Style A)	2
SD-62	Saddle, Tapping 6.63-7.60 2" IP (Smith Blair #317-076014-000 or Romac #202-7.50 x 2" IP) - OLD S-45	8
SD-63	Saddle, Tapping Bronze 6.90, 3/4" IP for C-900 (Ford #S91-603 Style A)	1
SD-64	Saddle, Tapping Bronze 6.90, 1" IP for C-900 (Ford #S91-604 Style A) - OLD S-65-B	0
SD-65	Saddle, Tapping Bronze 6.90, 2" IP for C900 (Ford #S91-607 Style A) - OLD S-65-C	0
SD-81	Saddle, Tapping 8.00-8.63 2" IP (Romac #202S-863 x 2" IP) - OLD S-54	1
SD-82	Saddle, Tapping 8.54-10.10 2" IP (Smith-Blair #317-101014-00) - OLD S-61	2
SD-91	Saddle, Tapping Bronze 9.05, 3/4" IP for C900 (Ford #S91-803 Style A) - OLD S-49-A	3
SD-92	Saddle, Tapping Bronze 9.05, 1" IP for C900 (Ford #S91-804 Style A) - OLD S-49-B	1
SD-93	Saddle, Tapping Bronze 9.05, 2" IP for C900 (Ford #S91-807 Style A) OLD S-49-C	1
SL-4	SLEEVE, 4" MJ, LONG SLEEVE AC, DCFSLEEVEMJLONG4	2
SL-6	SLEEVE, 6" MJ, LONG SLEEVE AC, DCFSLEEVEMJLONG6	1
SL-8	SLEEVE, 8" MJ, LONG SLEEVE AC, DCFSLEEVEMJLONG8	1
T-1	Tee, Brass, 1"	6
T-126	Tee, C.I. 12" MJ x 6" Flg	0
T-3-4	Tee, Brass, 3/4"	2
T-40	Tee, C.I. 4", Flg x Flg x Flg	1
T-41	Tee, C.I. 4", MJ x MJ x Flg	1
T-46	Tee, C.I. 4", MJ x MJ x MJ	2
T-61	Tee, C.I. 6" x MJ x 6"Flg	0
T-62	Tee, CI, 6", MJ X MJ X MJ	2
T-64	Tee, DI 6" Flg x 6" Flg x 4" Flg	4
T-66	Tee, DI 6" Flg x 6" Flg x 6" Flg	1

water

INVENTORY-Sewer

July 8, 2025

Item	Description	Qty On Hand
T-82	Tee, CI, 8", MJ X MJ X MJ	1
T-83	Tee, C.I. 8" MJ x 6" Flg	1
T-84	Tee, C.I. 8" MJ x 8" Flg	2
T-85	Tee, C.I. 8" MJ x 4" Flg	2
T-86	Tee, 8" Flg x 6" Flg x 8" Flg	-1
T-88	Tee, 8" Flg x 8" Flg Tee	1
TP-2	TAPE, VINYL, BLACK, 3/4" X 66, 3M 37, #054007-0918 0 (BIG HOLE)..	-10
V-100	Valve, Gate 10" MJ x MJ, RW	2
V-120	Valve, Gate 12"MJ x MJ RW x/Std MJ Accs.	2
V-40	Valve, Gate 4" Flg x MJ	1
V-41	Valve, Gate 4" Flg x Flg	0
V-42	Valve, 4" Tapping Gate	1
V-43	Valve, Gate 4" MJ x MJ,	3
V-60	Valve, Gate 6" Flg x Flg	4
V-61	Valve, Gate 6" MJ x MJ	1
V-62	Valve, Tapping 6" Tap x MJ	1
V-63	Valve, Gate 6" Flg x MJ RW..use w/Std MJ Acc Pk	1
V-64	Valve, Gate 6" PO x PO RW w PO Gskts	1
V-80	Valve, Tapping 8" Flg x MJ RW	1
V-81	Valve, Gate 8" Flg x Flg	1
V-82	Valve, Gate w/Accs. 8" Flg x MJ	4
V-83	Valve, Gate 8" MJ x MJ	3
VC-60	Valve, Detector Check 6" w/o Trim	1

SANITARY SEWER DATA

Ukiah Utilities
A Department of the City of Ukiah

Name of Person Completing this Form: _____

Date:

MONTH	DAY	YEAR

MANHOLE NUMBER

LOCATION			
Street Address	District / City	Latitude	Longitude

COVER		
Shape	Size	Material

RIM ELEVATION

PIPE CONNECTIONS				
Position*	Invert Elevation	Pipe Size	Flow From	Flow to

* Based on the true North

ADDITIONAL COMMENTS

MANHOLE SKETCH

GRANITE XP REPORT CAPABILITIES

Observations by Inspections

SITE

Site ID	City	Address	Upstream Node	Downstream Node
T399-1106-4964	Los Angeles, CA	2494 Art Blvd.	MH-97-8326-49	MH-75-8749-16

Pipe Type	Pipe Shape	Pipe Height	Pipe Width
ZZZ	C	18	18

INSPECTION DATA

Planned Footage	Planned Date	Start Date	End Date
328	8/26/1983	8/26/1983	8/26/1983

Surveyed Footage	Status	Operator	Work Order No.
328	Canceled	Jim Smith	716-5288-0096

Reason	Weather	Condition
REGULAR	BAD	SAT1

OBSERVATIONS

Footage	Length	Clock From	Clock To	Code	Modifiers/Severity	Rating
8.00	0.00	0	0	START		
15.50		10	9	LAT		Lev 1
24.00		3	3	CAVITY		Lev 2
35.50	0.00	1	5	GROUTED		Lev 1
108.50		4	4	LAT		Lev 1
131.50	15.50	11	6	CRACK	SEVERE	Lev 1
177.50	34.00	8	8	CRACK	SEVERE	Lev 1
35.50	0.00	1	5	GROUTED		Lev 1

Granite XP includes robust Report Management capabilities. Reports can be generated and sent to a printer or another format such as an ODBC target, PDF, HTML or ASCII file. You can also e-mail reports directly from the application. Furthermore, you can register and use report templates from Crystal Reports.

GraniteXP Observation Report with Still Images

Main Asset ID:	Project Name:	Inspection Date:	Weather:	Operator:
T399-1106-4964	Inspections for Los Angeles Waters	8/26/1983	BAD	Jim Smith

Upstream Node:	Downstream Node:	Main Length:	Planned Footage:
MH-97-8326-49	MH-75-8749-16	328.00	328.00

Comments:

New Inspection Crew

OBSERVATIONS

Distance	Length	Code	Reversed	Clock Pos.	Severity	Comment
8.00	0.0	START	0	0 / 0		
15.50		LAT	0	10 / 9		24
24.00	0.0	CAVITY	0	3 / 3		
35.50		GROUTED	0	1 / 5		26

108.50	0.0	LAT	0	4 / 4		

131.50	15.5	CRACK	0	11 / 6	SEVERE	32

Using the Office edition of Granite XP, you can create reports for clients, browse for specific data, make corrections and also add projects, assets, and inspections. You can also create new report templates using the Report Wizard. This wizard will prompt you to select objects and properties to display in the report, grouping and sorting options, and the report layout. Based on the custom settings you select, the wizard will generate a report template and save it as a file.

TV Inspections by Projects

Project Name: 0778IL CITY OF BERWYN

Contractor Name:

Client Name:

Planned Date: 5/21/2001 12:54:51 PM Start Date:

Planned Footage: End Date:

Status: Canceled Surveyed Footage:

Reason: Operator: GENE POSCHNER

Weather: Light Rain Work Order No.:

Condition: Paved Asphalt

Comments: FLOW IS WEST: REVERSE SETUP

Planned Date: 5/21/2001 12:07:32 PM Start Date:

Planned Footage: End Date:

Status: Canceled Surveyed Footage:

Reason: Operator: GENE POSCHNER

Weather: Light Rain Work Order No.:

Condition: Paved Asphalt

Comments: FLOW IS WEST

Planned Date: 5/21/2001 11:09:44 AM Start Date:

Planned Footage: End Date:

Status: Canceled Surveyed Footage:

Reason: Operator: GENE POSCHNER

Weather: Light Rain Work Order No.:

Condition: Paved Asphalt

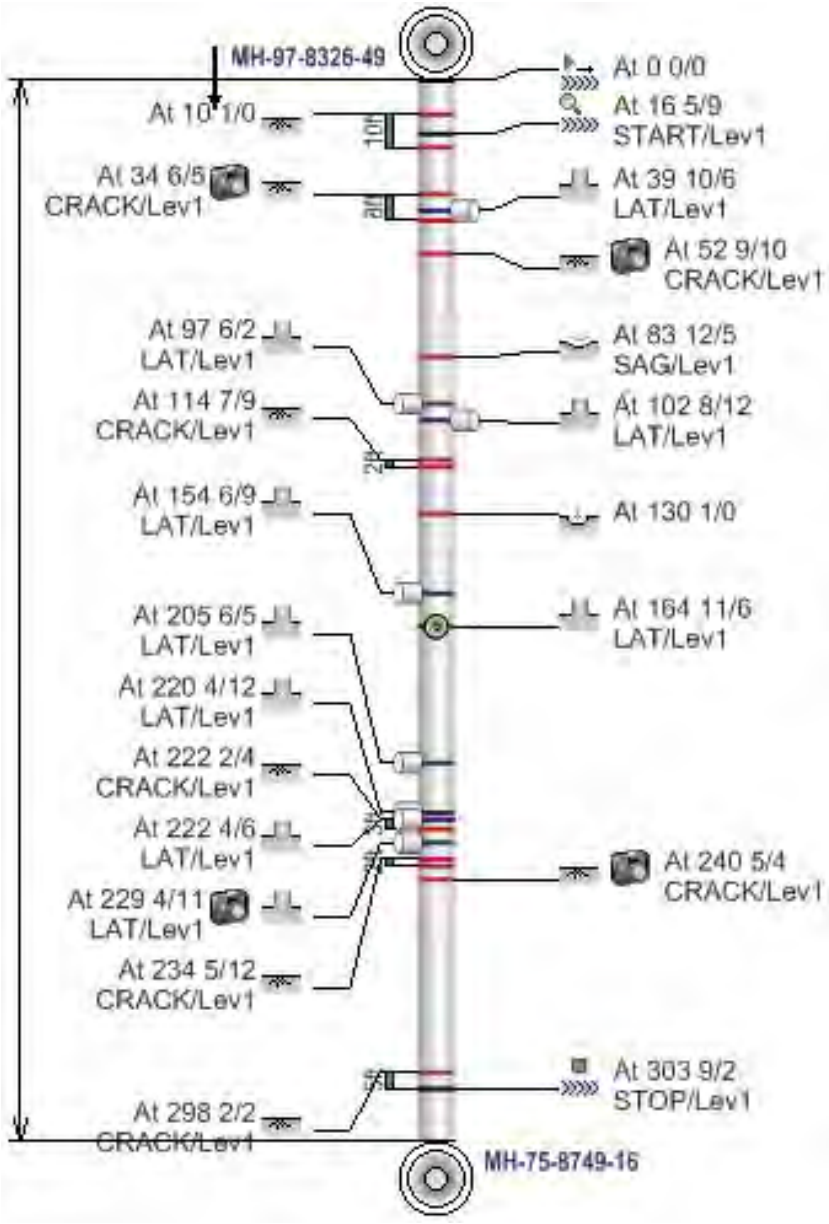
Comments: FLOW IS SOUTH: REVERSE SETUP

Report Templates are used to define the content and look of a report. Most reports packaged with Granite XP will be represented as templates (in conjunction with report presets to set up filtering criteria). Each report template consists of a number of objects to be described. These objects are represented by a subset of their properties (report fields). Graphics and secondary fields can also be included. For example, values like averages or sums, sorting, and grouping.

TV Inspection with Pipe-Run Graph

Project Name:	Asset ID:	City:	Address:	Surveyed Footage:
Inspections for Los Angeles Waters	T399-1106-4964	Los Angeles, CA	2494 Art blvd.	328

Planned Footage:	Pipe Width:	Pipe Height:	Pipe Type:	Surface Condition:	Direction:
328	18	18	ZZZ	SAT1	Towards Downstream



Report Presets are used to speed up day-to-day report operations like printing and exporting daily or weekly reports. In Granite XP, it is useful to specify persistent filters for daily or weekly reports and for selecting and generating several reports at a time. By specifying persistent filters for report templates and selecting and generating several reports at a time, report processing time can be shortened.

Lateral Inspection with Pipe-Run Graph

SITE DATA

Site ID	City	Address	Upstream Node	Downstream Node
P11-22	Orlando	9988 Main St	MAN11	MAN22

Pipe Type	Pipe Shape	Pipe Height	Pipe Width	Total Lateral Count
CAS	C	18	18	1

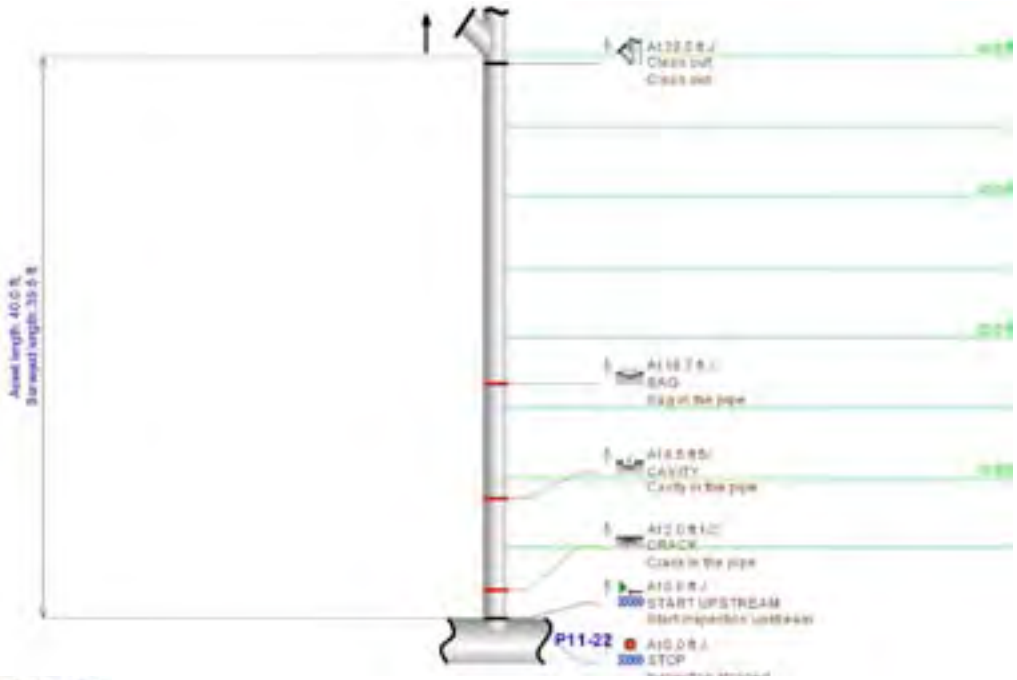
LATERAL AT 20.5

Lateral ID	Pipe Type	Pipe Shape	Pipe Height	Pipe Width	Clock position
P11-22 - 1	PE	C	6		3 O'Clock

Surveyed Footage	Status	Operator	Work Order No.
39.5	Suspended	hEmployer1	

Reason	Weather	Condition	Start Date	End Date
REGULAR	Light Rain	SAT1	6/2/2004	

Comments



Report filters are a means of selecting only relevant information to be presented in a report. In Granite XP, Reports can be filtered by applying a Report Template to include user-defined information for the Report. You can create and modify a report filter for a report based on a template.

PACP Sewer Report

Surveyors Name: Scooby Doo	and Certificate Number: t-1234-5678	System Owner: my owner	Survey Customer: my customer	Drainage Area: my drain area			Sheet No.: 1
P/O No.: my po number	Pipeline Segment Reference: section178	Date: 2003/05/15	Time: 13:44	Location (Street Name and Number): my street		Locality: my city	
Further Location Details: my location details				Upstream Manhole Number: 123B	Rim to Invert: 444.4	Direction: U	Grade to Invert: 222.2	Flow Control: D	Rim to Grade: 666.7
Downstream Manhole Number: 123A			Rim to Invert: 111.1	Grade to Invert: 555.6	Rim to Grade: 333.3	Use of Sewer: SW	Year Laid: 1905	Year Rehabilitated: 1905	Tape/Media Number: 123abc
Width: 14	Shape: C	Material: OB	Ln. Method: FF	Pipe Joint Length: 7.5	Total Length: 28.0	Length Surveyed: 12.0	Height: 12		
Purpose: B	Sewer Category:	Pre-Cleaning: J	Cleaned: 2003/07/27	Weather: 2	Location Code: G	Additional Information			

Grade	Amount of Structural Defects	Structural Segment Grade	Structural Pipe Rating	Structural Pipe Structural Quick Rating	Structural Pipe Rating Index	Amount of O&M Defects	O&M Segment Grade	O&M Pipe Rating	O&M Quick Rating	O&M Pipe Rating Index	Overall Pipe Rating	Overall Pipe Rating Index
1	0	0	15	5231	3.75	0	0	2	2100	2	17	3.4
2	1	2				1	2					
3	1	3				0	0					
4	0	0				0	0					
5	2	10				0	0					

"The Standard of the Industry"

C.C.T.V. Inspection Form

Surveyors name (1) and Certificate number (1a) | System Owner (2) | Survey Customer (3) | Drainage Area (4) | Sheet No. (5)

P/O No. (6) | Pipeline Segment Reference (7) | Date (8) CCYY/MM/DD | Time (9) | Location (Street Number and Name) (10) | Locality (10a)

Further Location details (11) | Upstream Manhole Number (12) | Rim to Invert (13) | Grade to Invert (14) | Rim to Grade (15)

Downstream Manhole Number (16) | Rim to Invert (17) | Grade to Invert (18) | Rim to Grade (19) | Use of Sewer (20) | Direction (21) | Flow Control (22) | Height (23)

Width (24) | Shape (25) | Material (26) | Ln. Method (27) | Pipe Joint Length (28) | Total Length (29) | Length Surveyed (30) | Year Laid (31) | Year Rehabilitated (32) | Tape / Media Number (33)

Purpose (34) | Sewer Category (35) | Pre-Cleaning (36) | Cleaned 36a) CCYY/MM/DD | Weather (37) | Location Code (38) | Additional Information (39)

Distance (feet) (meters)	Video Ref.	Code		Continuous defect	Value				Joint	Circumferential Location		Image Ref.	Remarks
		Group/ Descriptor	Modifier/ severity		S/ M/ L	Inches (mm) 1st	Inches (mm) 2nd	%		At/ From	To		
●													
●													
●													
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●													
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●													

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C.C.T.V. Inspection Continuation Form

Surveyors name (1) | System Owner (2)) | Date (8) CCYY/MM/DD | Upstream Manhole Number (12) | Pipe Segment Ref (If Applicable) (7) | Sheet No. (5)

Distance (feet) (meters)	Video Ref.	Code		Continuous defect	Value				Joint	Circumferential Location		Image Ref.	Remarks
		Group/ Descriptor	Modifier/ severity		S/ M/ L	Inches (mm) 1 st	Inches (mm) 2 nd	%		At/ From	To		

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MANHOLE INSPECTION FORM

Surveyor's name (1)	Certificate number (1a)	System Owner (2)	Survey Customer (3)
Drainage Area (4)	Sheet No. (5)	P.O. No. (6)	Date (CCYY/MM/DD) (8)
Time (9)	Location (No. & Name) (10)	Locality/City Name (10a)	Further Location Details (11)
Manhole Number (12)	Outgoing Rim to Invert (13)	Outgoing Grade to Invert (14)	Rim to Grade (15)
Use of Sewer (20)	Year Laid (31)	Year Rehabilitated (32)	Tape/Media Number (33)
Purpose (34)	Sewer Category (35)	Pre-Cleaning (36)	Date Cleaned (CCYY/MM/DD) (36a)
Weather (37)	Location Code (38)	Additional Information (39)	Manhole Surface Type (40)
Potential for Runoff (41)	Access Point Type (42)	Northing (43)	Easting (44)
Elevation (45)	Coordinate System (46)	Accuracy of GPS (47)	Inspection Status (48)
Evidence of Surcharge (49)	Image Reference (50)	Video Name (51)	

SKETCH

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MANHOLE COMPONENT OBSERVATIONS

Cover Shape	Cover Size/ Width		Cover Material	Cover Type	Vent Hole Diameter	# Vent Holes

Cover Bearing Surface Diameter/Width		Cover/Frame Fit	Cover Condition	Cover Insert Type	Cover Insert Condition

MH Adjustment Ring Type	MH Adjustment Ring Condition	MH Adjustment Ring Height

Frame Material	Frame Bearing Surface Width	Frame Bearing Surface Depth	Frame Clear Opening Diameter

Frame Condition	Frame Seal Condition	Frame Offset Distance	Frame Seal Inflow	Frame Depth	Chimney Material 1

Chimney Material 2	Int. Chim. Coating/Liner	Ext. Chim. Coating/Liner	Chimney I/I	Chimney Clear Opening	Chimney Depth

Cone Type	Cone Material	Int. Cone Coating/Liner	Ext. Cone Coating/Liner	Cone Depth	Wall Diameter (length/width)	

Wall Material	Int. Wall Coating/Liner	Ext. Wall Coating/Liner	Wall Depth	Bench Present?	Bench Coating/Liner

Bench Material	Channel Installed	Channel Material	Channel Type	Channel Exposure	# Steps

Step Material

PIPE CONNECTION FIELDS

Pipe Number	Pipe Clock Position	Rim to Invert	Pipe Direction	Pipe Material	Pipe Shape	Pipe Diameter	Pipe Width	Pipe Seal Condition	Pipe Special Condition	Connects to Access Point ID

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Section 4—Continuous Defect Coding

"TRULY" 4-1

"Truly" continuous defects run along the sewer without any interruption for more than 3 feet.
Examples:
- Longitudinal Fractures
- Cracks

"REPEATED" 4-1

"Repeated" continuous defects occur at regular intervals along the sewer. These occur at pipe joints and include:
-Encrustation
-Open Joints
-Circumferential Fractures

Section 5—Structural Defect Coding (Module 6A)

C CRACK 5-1
- CL Longitudinal 5-2
- CC Circumferential 5-2
- CM Multiple 5-2
- CS Spiral 5-2

F FRACTURE 5-7
- FL Longitudinal 5-7
- FC Circumferential 5-7
- FM Multiple 5-7
- FS Spiral 5-7

B BROKEN 5-15
- BSV -Soil Visible 5-15 Beyond Defect
- BV V -Void Visible 5-15 Beyond Defect

H HOLE 5-17
- HSV -Soil Visible 5-17 Beyond Defect
- HV V -Void Visible 5-17 Beyond Defect

D DEFORMED 5-19
- DV Deformed Vertically (brick) 5-19
- DH Deformed Horizontally (brick) 5-19

X COLLAPSE 5-23
- XP Pipe Collapse 5-23
- XB Brick Collapse 5-23

J JOINT 5-27
- JO Joint Offset (Displaced) 5-27
- JS Joint Separated (Open) 5-27
- JA Joint Angular 5-27

S SURFACE DAMAGE 5-32
- SRI Roughness Increased 5-32
  - SRIM -Mechanical 5-33
  - SRIC -Chemical Attack 5-33
  - SRIZ -Not Evident 5-33

S SURFACE DAMAGE 5-32
- SAV Aggregate Visible 5-32
  - SAVM -Mechanical 5-33
  - SAVC -Chemical Attack 5-33
  - SAVZ -Not Evident 5-33

S SURFACE DAMAGE 5-32
- SAP Aggregate Projecting 5-32
  - SAPM -Mechanical 5-33
  - SAPC -Chemical Attack 5-33
  - SAPZ -Not Evident 5-33

S SURFACE DAMAGE 5-32
- SAM Aggregate Missing 5-32
  - SAMM -Mechanical 5-33
  - SAMC -Chemical Attack 5-33
  - SAMZ -Not Evident 5-33

S SURFACE DAMAGE 5-32
- SRV Reinforcement Visible 5-32
  - SRVM -Mechanical 5-33
  - SRVC -Chemical Attack 5-33
  - SRVZ -Not Evident 5-33

S SURFACE DAMAGE 5-32
- SRP Reinforcement Projecting 5-32
  - SRPM -Mechanical 5-33
  - SRPC -Chemical Attack 5-33
  - SRPZ -Not Evident 5-33

S SURFACE DAMAGE 5-32
- SRC Reinforcement Corroded 5-32
  - SRCM -Mechanical 5-33
  - SRCC -Chemical Attack 5-33
  - SRCZ -Not Evident 5-33

S SURFACE DAMAGE 5-32
- SMW Missing Wall 5-33
  - SMWM -Mechanical 5-33
  - SMWC -Chemical Attack 5-33
  - SMWZ -Not Evident 5-33

S SURFACE DAMAGE 5-32
- SSS Surface Spalling 5-33
  - SSSM -Mechanical 5-33
  - SSSC -Chemical Attack 5-33
  - SSSZ -Not Evident 5-33

S SURFACE DAMAGE 5-32
- SZ Other 5-33
  - SZM -Mechanical 5-33
  - SZC -Chemical Attack 5-33
  - SZZ -Not Evident 5-33

S SURFACE DAMAGE 5-32
- SCP Corrosion (metal pipe) 5-33

LF LINING FAILURE 5-46
- LFD Detached Lining 5-46
- LFDE Defective End 5-46
- LFB Blistered Lining 5-46
- LFCS Service Cut Shifted 5-46
- LFAC Abandoned Connection 5-46

LF LINING FAILURE (continued) 5-46
- LFOC Overcut Service 5-46
- LFUC Undercut Service 5-46
- LFBK Buckled Lining 5-46
- LFW Wrinkled Lining 5-46
- LFZ Other 5-46

WF WELD FAILURE 5-58
- WFL Longitudinal 5-58
- WFC Circumferential 5-58
- WFM Multiple 5-58
- WFS Spiral 5-58
- WFZ Unidentified 5-58

RP POINT REPAIR 5-64
- RPR Pipe Replaced 5-64
  - RPRD -Defective 5-64
- RPP Patch Repair 5-64
  - RPPD -Defective 5-64

RP POINT (cont) **REPAIR** 5-64
- RPL Localized Lining 5-64
  - RPLD -Defective 5-64
- RPZ Other 5-64
  - RPZD -Defective 5-64

BRICKWORK 5-70
- DB Displaced 5-70
- MB Missing 5-70
- DI Dropped Invert 5-70

BRICKWORK (continued) 5-70
- MM Missing Mortar 5-70
  - S -Small 5-70
  - M -Medium 5-71
  - L -Large 5-71

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Section 6—Operational and Maintenance (Module 6B)

D DEPOSITS 6-1	
DA	Attached 6-1
DAE	-Encrustation 6-2
DAGS	-Grease 6-2
DAR	-Ragging 6-2
DAZ	-Other 6-2

D DEPOSITS 6-1 (continued)	
DS	Settled 6-1
DSF	-Fine 6-2
DSGV	-Gravel 6-2
DSC	-Hard/Compacted 6-2
DSZ	-Other 6-2

D DEPOSITS 6-1 (continued)	
DN	Ingress 6-1
DNF	-Fine Material (silt & sand) 6-3
DNGV	-Gravel 6-3
DNZ	-Other 6-3

R ROOTS 6-7	
RF	Fine 6-7
RFB	-Barrel 6-7
RFL	-Lateral 6-7
RFC	-Connection 6-7

R ROOTS 6-7 (continued)	
RM	Medium 6-7
RMB	-Barrel 6-7
RML	-Lateral 6-7
RMC	-Connection 6-7

R ROOTS 6-7 (continued)	
RB	Ball 6-7
RBB	-Barrel 6-7
RBL	-Lateral 6-7
RBC	-Connection 6-7

R ROOTS 6-7 (continued)	
RT	Tap 6-7
RTB	-Barrel 6-7
RTL	-Lateral 6-7
RTC	-Connection 6-7

I INFILTRATION 6-13	
IW	Weeper 6-13
ID	Dripper 6-13
IR	Runner 6-13
IG	Gusher 6-13

OB OBSTACLES/ Obstructions 6-19	
OBB	Brick or Masonry 6-19
OBM	Pipe Material in Invert 6-19

OB OBSTACLES/ Obstructions (cont) 6-19	
OBI	Object protruding through wall 6-19
OBJ	Object wedged in joint 6-19

OB OBSTACLES/ Obstructions (cont) 6-19	
OBC	Object through connection/junction 6-19
OBP	External Pipe Cable 6-19

OB OBSTACLES/ Obstructions (cont) 6-19	
OBS	Built into structure 6-20
OBN	Construction Debris 6-20
OBR	Rocks 6-20
OBZ	Other 6-20

V VERMIN 6-31	
VR	Rat 6-31
VC	Cockroach 6-31
VZ	Other 6-31

Section 7—Construction Features Coding (Module 6C)

T TAP 7-1	
TF	Factory Made (junction) 7-1
TFA	-Active 7-2
TFB	- Abandoned 7-2
TFC	-Capped 7-2
TFD	-Defective 7-2

T TAP (continued) 7-1	
TB	Break In/Hammer (connection) 7-2
TBI	-Intruding 7-2
TBA	-Active 7-2
TBB	-Abandoned 7-2
TBC	-Capped 7-2
TBD	-Defective 7-2

T TAP (continued) 7-1	
TS	Saddle (connection) 7-2
TSI	-Intruding 7-2
TSA	-Active 7-2
TSB	- Abandoned 7-2
TSC	-Capped 7-2
TSD	-Defective 7-2

IS INTRUDING SEAL MATERIAL 7-8	
ISSR	Sealing Ring 7-8
ISSRH	-Hanging 7-8
ISSRB	-Broken 7-8

IS INTRUDING SEAL MATERIAL 7-8 (continued)	
ISGT	Grout 7-8
ISZ	Other 7-8

L LINE 7-11 (of sewer)	
LL	Left 7-11
LLU	Left & Up 7-11
LLD	Left & Down 7-11
LR	Right 7-11

L LINE 7-11 (of sewer) (continued)	
LRU	Right & Up 7-11
LRD	Right & Down 7-11
LU	UP 7-11
LD	Down 7-11

A ACCESS POINT 7-13	
AMH	Manhole 7-13
AWA	Wastewater Access 7-13
ADP	Discharge Point 7-13
ATC	Tee Connection 7-13

A ACCESS POINT (continued) 7-13	
AOC	Other Special Chamber 7-14
AM	Meter 7-14
AWW	Wet Well 7-14
AJB	Junction Box 7-14

A ACCESS POINT (continued) 7-13	
ACO	Clean Out 7-14
ACOM	-Mainline 7-14
ACOP	-Property 7-14
ACOH	-House 7-14

A ACCESS POINT (continued) 7-13	
ACB	Catch Basin 7-14
AEP	End of Pipe 7-14

Section 8—Miscellaneous Features Coding (Module 6D)

M MISC. FEATURES 8-1	
MCU	Camera Underwater 8-1
MGO	General Observation 8-1
MGP	General Photograph 8-1

M MISC. FEATURES (cont) 8-1	
MSC	Shape/Size Change (Sewer Dims/ Vertical/ Horizontal) 8-1
MJL	Joint Length Change 8-1

M MISC. FEATURES (cont) 8-1	
MLC	Lining Change 8-1
MMC	Material Change 8-2
MSA	Survey Abandoned 8-2
MWL	Water Level 8-2
MWLS	-sag 8-2

M MISC. FEATURES (cont) 8-1	
MWM	Water Mark 8-2
MY	Dye Test 8-2
MYV	-Dye Visible 8-2
MYN	-Not Visible 8-2

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EXHIBIT "A" TO RESOLUTION 2008-03

CITY OF UKIAH
AND
UKIAH VALLEY SANITATION DISTRICT

SEWER LATERAL REPLACEMENT/REPAIR GRANT PROGRAM GUIDELINES

This Sewer Lateral Replacement/Repair Grant Program (Grant Program) is offered to eligible owners of property located within the City of Ukiah (City) or the Ukiah Valley Sanitation District (District) to help defray the cost of replacing or repairing a qualified defective sewer lateral. Sewer lateral repairs must meet the standards established for a 25 year Sewer Lateral Certificate of Compliance to be eligible for a grant. The City and the District reserve the right to suspend or terminate the Grant Program at any time for any reason and they will suspend or terminate the program if program funds are exhausted. The City and District reserve the right to substitute the Grant Program with a Public Work Project for street lateral rehabilitation consisting of the relining of the street lateral or utilizing other approved trenchless technology and construction of a two way sewer lateral cleanout within the public right of way or any other Cost Participating Project related to the repair or replacement of the sewer lateral in whole or in part. A determination to substitute the Grant Program with a Public Work Project or Cost Participation Project will be made on a project by project basis associated with the rehabilitation of the sewer main and such decision will be made by the governing body of the City or District.

DEFINITIONS

As used in this Grant Program, the following words and phrases shall have the following definitions, which 11eed not be capitalized, when used in these Guidelines:

A "Application" shall mean and refer to a form and process that an eligible property owner must complete and follow in order to qualify for a grant under the Grant Program. All applications will be prioritized by the City or District and reviewed for approval.

B. "Building Drain" shall mean and refer to that part of the lowest piping of a drainage system which receives the discharge from soil, waste, and other drainage pipes inside the walls of the building or structure and conveys it to the building sewer which begins two feet outside the exterior building wall.

C. "Building Sewer" shall mean and refer to that that portion of the sewer lateral which extends from two feet from outside the exterior building wall to the property line.

D. "Building Wall" shall mean and refer to a component part of a structure built, erected, framed and designed for the housing, shelter, enclosure or support of persons, animals, or property of any kind.

E. "Closed Circuit TV Inspection" or "CCTV Inspection" shall mean and refer to a process whereby a camera is placed into and run through the inside of a sewer lateral or public sewer main for the purpose of visually detecting leaks or other defects and the inspection is recorded on DVD or videotape or other approved recording medium all in accordance with the standards and specifications adopted by the City and District.

F. "Defective Sewer Lateral, Defective Building Lateral or Defective Street Lateral" shall mean and refer to any sewer lateral, building lateral, or street lateral that fails the exfiltration test or that at the sole discretion of the City or District unacceptable pipe defects are noted as a result of the CCTV Inspection.

G. "Eligible Costs" shall mean and refer to qualified expenditures made by the property owner as a result of replacing or repairing a qualified defective sewer lateral that can be reimbursed to the property owner under the Grant Program up to the maximum reimbursement amount allowed.

H. "Eligible Property Owner" shall mean and refer to any Property Owner legally connected to the City or District public sewer main by a defective sewer lateral and who is not discharging prohibited liquids and substances into the sewer lateral and illegal connections to the sewer lateral do not exist.

I. "Exfiltration Test" shall mean and refer to the static water test that is to be performed on a sewer lateral in accordance with the procedures and standards established by the City and District to determine if the lateral is defective.

J. "Grant" shall mean and refer to an amount of money that may be reimbursed by the City or District to an Eligible property Owner or his/her agent or designee and is less than or equal to 50% (fifty percent) of the Eligible Costs. The Grant amount shall not exceed the Maximum Grant Amount.

K. "Maximum Grant Amount" shall mean and refer to the maximum reimbursement that will be made by the City or District for each qualifying defective sewer lateral and this maximum reimbursement shall be set by Resolution of the Governing Body.

L. "Grant Funds" shall mean and refer to a portion of those funds designated for Inflow/Infiltration reduction within Budget Account 614.3510.810.004 for the City and Budget Account 614.3510.811.004 for the District. The amount of Grant Funds shall be determined by the City or District on an annual basis.

M. "Public Sewer Main" shall mean and refer to the sewers owned or maintained by the City or District lying within the limits of public streets, roads, easements, reserves, non-exclusive easements or other rights of way serving or intended to serve two or more separate properties or parcels. The street lateral is not a Public Sewer Main, however, the street lateral wye connection to the sewer main shall be considered as a component of the Public Sewer Main. Any sewer lateral connection that is made to sewer main without the use of a fitting such as a wye or saddle is not a component of the Public Sewer Main.

N. "Qualified Defective Sewer Lateral" shall mean and refer to a sewer lateral that has been inspected and tested as a result of the occurrence of an event or trigger that requires the inspection and testing of the sewer lateral pursuant to the Sewer Lateral Inspection and Testing Ordinances adopted by the City or District and the sewer lateral has failed the exfiltration test or the City or District has determined as a result of the CCTV Inspection that the condition of the sewer lateral is not acceptable. A Qualified Defective Sewer lateral does not include a sewer lateral which has been tested and inspected at the discretion of the property owner or his/her agent or designee.

O. "Qualified Expenditure" or "Qualified Expense" shall mean and refer to a monetary expense for labor, materials, and equipment incurred by the property owner as a result of making permitted repairs or replacements to a qualified defective sewer lateral subsequent to receiving an approved permit to perform a sewer lateral inspection and test. A qualified expense includes the expenditures for the necessary excavation and backfill or the operations necessary for a trenchless technology related to the repair or replacement of a qualified defective sewer lateral including the reasonable restoration of improvements and landscape to a condition that existed just prior to the performance of the excavation work. A Qualified Expenditure does not include costs incurred by the property owner for permit and inspection fees and for services related to the inspection and testing of the sewer lateral. If the repair or replacement of the building sewer lateral is made by the property owner, as opposed to the employees or contractors of the property owner, a labor cost allowance will not be considered as a Qualified Expenditure.

P. "Reasonable Replacement" shall mean and refer to the in-kind replacement of overlying improvements and landscaping directly above the repaired or replaced qualified defective sewer lateral and it shall exclude any upgrade in any replaced improvement or landscape or the replacement of improvements and landscaping that were removed at the discretion of the property owner or their agent.

Q. "Sewer Lateral Repair(s)" shall mean and refer to repair methods made to the sewer lateral that meet the standards established by the City or District for obtaining a 25 year Sewer Lateral Certificate of Compliance.

R. "Street Lateral" shall mean and refer to that portion of the sewer lateral which extends from the property line to the Public Sewer Main.

GUIDELINES FOR GRANTS TO ELIGIBLE PROPERTY OWNERS

1. The Grant Program is available only to Eligible Property Owners who are required to repair or replace a qualified defective sewer lateral because of the occurrence of an event or trigger which requires the inspection and testing of the sewer lateral in accordance with the City's or District's Sewer Lateral Inspection and Testing Ordinance. The maximum Grant Amount for the repair or replacement of each qualified defective sewer lateral shall be set by Resolution. Because Grant Funds are limited, the Grant Program is not available to Property Owners who repair or replace their sewer lateral at their own discretion or to Property Owners who construct new structures on vacant parcels or who redevelop previously developed parcels and utilize the existing sewer lateral(s).

2. To become eligible to receive a Grant, an Eligible Property Owner must first submit a completed Grant Application along with evidence that the sewer lateral is a qualified defective sewer lateral. The Grant Application may either be submitted prior to the start or after the completion of the sewer lateral repair or replacement work. In either case, the sewer lateral repair or replacement work must be performed under a permit issued by the City or the District.

a. If the Grant Application is submitted prior to the start of the repair or replacement of a qualified defective sewer lateral, the Eligible Property Owner shall obtain at least one bid or cost quotation for the repair or replacement work. All bids or cost quotations shall be obtained from contractors licensed with the State of California to perform work on private

sewer laterals. In the case of repairs to the sewer lateral, the scope of work contained in the bid or quote shall be sufficient to ensure that the repair work, once completed and tested, will meet the standards established for a 25 year Sewer Lateral Certificate of Compliance. All bids shall be submitted with the Grant Application to the City or District for review and confirmation of Eligible Costs. After the Grant Application has been approved by the City or the District and the sewer lateral repair or replacement work is completed within 60 days from the approval date of the Grant Application and the repaired or replaced sewer lateral passes the Exfiltration Test, payment of the approved eligible costs up to the maximum amount allowed for the grant is guaranteed. Payment of the Grant amount will be made to the Eligible Property Owner after the permit is finalized and within the City's and District's normal time frame for processing warrants. Should the sewer lateral repair or replacement work not be completed within the time frame stipulated on the approved Grant Application, the application will be processed as if the sewer lateral repair or replacement work had been completed prior to receiving an approved Grant Application.

b. If the Grant Application is submitted subsequent to the completion of the sewer lateral repair or replacement work, the Eligible Property Owner shall submit with the Grant Application copies of all invoices from the licensed contractor who performed the work or, if the work was self performed by the Eligible Property Owner, copies of the material and equipment payment receipts. After receipt of a complete Grant Application, the City or District will determine which costs are Eligible Costs and any cost(s) which appear to be unreasonable for the type of work performed will be subject to revision to be considered Eligible Costs. If sufficient funds are available within the Grant Fund and the repaired or replaced sewer lateral has passed the Exfiltration Test and the Permit finalized, the Grant Application will be approved. Payment of the Grant amount will be made to the Eligible Property Owner within the City's and District's normal time frame for processing warrants. The submittal date of a complete Grant Application will determine its order to be considered for any available grant funding.

c. If an Eligible Property owner elects to self perform the repair or replacement of a qualified defective sewer lateral, the Grant Application process must follow the process described in sub-paragraph b, above. Unless the Eligible Property Owner is a licensed Contractor with the State of California and is qualified to perform work on a private sewer lateral, the Eligible Property Owner cannot self perform work on the street lateral.

d. Grant funds not exceeding the maximum Grant Amounts shall be set aside by the City or District and reserved for Property Owners who become Eligible as a result of the rehabilitation or replacement of the sewer main for one year commencing with the date of the Notice of Completion of the sewer main work. After the one year period, the approval of the Grant Application will be subject to available funds and processed as indicated in either sub-paragraphs a or b, above.

3. Only the following shall constitute evidence that a sewer lateral is a qualified defective sewer lateral:

a. A CCTV inspection and an Exfiltration Test were performed as required by the City's or District's Sewer Lateral Inspection and Testing Ordinance, and

b. The CCTV inspection indicates that the sewer lateral is a defective sewer lateral. The following shall constitute a defective sewer lateral.

i. Either any one of the following three conditions of the sewer lateral:

a) The pipe section has been altered as a result of a partial or complete pipe collapse and flow blockages have or can occur as a result of the altered pipe section;

b) A severe belly or sump within the sewer lateral causes the settlement of solids thereby increasing the risk of flow blockages;

c) An offset in a pipe joint which can restrict the flow of solids and cause flow blockages; or

ii. The sewer lateral fails the Exfiltration Test.

4. Subsequent to the finalization of the Permit for sewer lateral repair or replacement, a Sewer Lateral Certificate of Compliance shall be issued by the City or District in accordance with the City's or District's Sewer Lateral Inspection and Testing Ordinances. A sewer lateral will not be eligible for another Grant until the Certificate of Compliance for that lateral has expired.

5. Prior to performing any work within the public right of way, an encroachment permit must be obtained from the agency having jurisdiction.

6. The following types of repair or replacements are reimbursable under the Grant Program:
   a. Open trench repair of the sewer lateral.
   b. Either partial or complete open trench replacement of the sewer lateral.
   c. Trenchless technologies such as pipe bursting and pipe relining. Pipe relining may be partial or for the entire length of the sewer lateral.
   d. Other method which is approved by the City or District prior to implementation.

7. The expenditures for the following type of work items related to the repair or replacement of the sewer lateral are to be considered qualifying expenditures:
   a. Contractor's mobilization and demobilization.
   b. Sawcutting of asphalt and Portland cement concrete and other hard surfaces to be removed to gain access to the sewer lateral.
   c. Traffic control related to the repair or replacement of the street lateral.
   d. Removal and replacement of public improvements over the street lateral.
   e. Reasonable removal and replacement of private improvements such as landscape, concrete, brick, or stone walkways and landscape irrigation.
   f. Removing and resetting portable landscape features such as small fountains and statues.
   g. Removing and resetting brick or concrete block planters and walls directly over the sewer lateral.
   h. Sewer lateral pipe materials including fittings and gaskets or glue.
   i. Excavation and backfill for open trench repair or replacement or for access pits needed for pipe bursting.
   j. All equipment used to excavate, backfill, pipe burst or reline the sewer lateral.
   k. Cleanup, hauling, and disposal of excavated materials including landfill or transfer station disposal fees.

8. The expenditures for the following type of items related to the repair or replacement of the sewer lateral are not to be considered qualifying expenditures:

a. CCTV inspections and Exfiltration Tests.
b. Fees for permits and inspections.
c. Installation of a sewer lateral cleanout needed to perform the CCTV inspection or to comply with the Plumbing Code.
d. Tree and/or stump removal.
e. Removal, replacement, or repair of in ground ponds or pools.
f. Obtaining estimates, bids, or quotes.
g. Acquisition of tools to perform the work.
h. Labor allowances and vehicle fuel, depreciation, mileage allowance, maintenance and all other vehicle expenses incurred in the course of material, equipment, and tool acquisitions and debris hauling and disposal when the work is self performed by the Eligible Property Owner.

9. In the event that there is an unresolved dispute between City or District Staff and the Grant Applicant regarding a determination made by staff, the following dispute resolution procedure shall be followed:

a. In the City, the Grant Applicant must first file a written request for resolution of the dispute to the Public Utilities Director. If a satisfactory resolution is not achieved within 15 calendar days, the Grant Applicant may file a claim with the City Clerk and the claim will be submitted to the City Council for resolution at the next regular City Council meeting occurring not less than 10 days following the filing of the claim with the City Clerk. The City Council shall provide an opportunity at the meeting for the Grant Applicant to make a presentation in support of his or her claim. It shall allow an opportunity for staff to present its position and shall hear from any other interested parties. The City Council shall have the final decision in the resolution of the dispute.
b. In the District, the Grant Applicant must first file a written request for resolution of the dispute to the District Manager or to the CEO or his designee if a District Manager has not been appointed. If a satisfactory resolution is not achieved within 15 calendar days, the Grant Applicant may submit a request to the CEO or his designee that the written dispute be placed on the agenda for the next District Board meeting. The District Board shall provide an opportunity at the meeting for the Grant Applicant to make a presentation in support of his or her claim. It shall allow an opportunity for staff to present its position and shall hear from any other interested parties. The District Board shall have the final decision in the resolution of the dispute.

Sewer Lateral Replacement Grant Program Application

Section I: General Information

- Grant Address: _____
- Applicant Name: _____
- Applicant Address: _____
  (if different from above)
- Applicant Phone: Home:_____ Work:_____

I certify by signing this application that I am the legal owner of the property described herein. I understand that this document is an application for a grant and does not entitle me to a grant unless or until the application has been approved by the City of Ukiah. I have been furnished with a copy of and have read the requirements for the Lateral Replacement Grant program and understand the City will provide me with a letter approving my application if funds have been granted. I understand that I am not eligible for a grant unless the City issues a *25 Year Certificate of Compliance* following the completion of the repair or replacement of my sewer lateral.

Signature: _____ Date: _____

Section II: Site Test/Inspection Information

Who will perform the inspection on your sewer line by using Closed Circuit Television (CCTV)?

Name: _____ Phone: _____

IMPORTANT:

1. All site test and CCTV Inspections are to be observed by a City of Ukiah representative.
2. Grant funds will not be obligated until the inspection, testing (if necessary), repair or replacement is completed, and the *25 Year Certificate of Compliance* has been issued.

Section III: Cost of Sewer Lateral Replacement

Please supply the invoice from the licensed contractor and submit to the City of Ukiah for review.

- Contractor Name: _____
- Cost: $_____

Are you performing any of the work on your own property yourself? If so:

- Estimate of material and equipment costs: $_____

Tax Liability Information: You are urged to consult your tax advisor concerning the taxability of grants. The City of Ukiah and the Ukiah Valley Sanitation District are not responsible for any taxes that may be imposed as a result of your receipt of this grant/payment (directly or indirectly). Grants in excess of $600 may need to be reported on IRS Form 1099. A completed Form W-9 (Request for Taxpayer ID Number and Certification) must accompany this application to help determine if Form 1099 will be issued by the City of Ukiah or the Ukiah Valley Sanitation District.

Please submit to:

City of Ukiah
Public Works Department
300 Seminary Ave
Ukiah, CA 95482

Phone: (707) 463-6282
Fax: (707) 463-6204

The following sections are for City of Ukiah office use only.

Section IV: Miscellaneous Requirements

- Exfiltration test date completed: _____
- *25 Year Certificate of Compliance* issued: ☐ Yes ☐ No

Section V: Payment information

- Amount of funds obligated: $_____ Date: _____

OFFICE USE ONLY

Project Approved

Date: _____

W-9 Attached: _____

Initials: _____

Permit #: _____

GOOD PLUMBING PRACTICES
PROTECT THE RUSSIAN RIVER

A Fact Sheet For Installers / Plumbers

Copper Affects the Russian River

Copper enters the Russian River and its tributaries through storm drains and from wastewater discharged from wastewater treatment plants. Because copper can be harmful to fish and many other types of aquatic life, it is important to prevent copper from entering the River whenever possible.

Although most of the copper entering the Russian River comes from stormwater, a significant portion also comes from the permitted discharge of treated wastewater. Most of the copper in wastewater is the result of copper pipe corrosion.

Although wastewater treatment plants can remove some of the copper in wastewater, controlling sources of copper also helps to reduce the amount of copper entering the Russian River. Copper from pipe corrosion is one source that can be easily reduced.

Content Courtesy of:

Bay Area Clean Water Agencies
A Joint Powers Agency

BAPPG
Bay Area Pollution Prevention Group

RRWA
Russian River Watershed Association

For more information,
please contact RRWA at:

info@rrwatershed.org

(707) 833 2552

www.rrwatershed.org

Plumbers Are Part of The Solution!

Your skilled installation techniques can greatly reduce pipe corrosion and help protect the Russian River. Here are some ways you can make a difference:

Best Management Practices

Follow the installation techniques specified by the ASTM B828 and the Copper Development Association in its Application Data Sheet for "soldering and brazing copper tube and fittings."

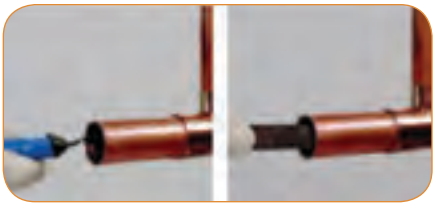
System Design

Design each plumbing system to:

1. Minimize velocity
2. Minimize hot water temperature
3. Avoid stagnant sections
4. Minimize direction and size changes

Careful Reaming

Eliminate small burrs created from pipe cutting. This reduces turbulence and significantly decreases corrosion.



Protected Storage

Protect stored pipe from weather and damage so that installed pipe is as clean as possible.

Thorough Cleaning

Remove all oxides, debris, and surface soil from tube ends.

Immediate and Regular Flushing

Newly installed systems should be flushed soon after completion to remove excess flux and debris. For inactive systems, repeat flushing periodically.

Pitting in 6-year-old cold water pipe caused by excess flux at solder joint.

Minimize Flux Use

Avoid excess use of flux to protect both your health and the river. Excess flux residue can increase pipe corrosion which leads to copper discharges to the river. **Warning:** Flux is harmful if carried to the eyes, mouth, or open cuts. Some fluxes also absorb through the skin. Wear protective equipment.

Less Corrosive Fluxes

The ASTM B813 flux standard limits flux corrosivity and requires that the flux be water flushable. While these are voluntary standards, the Copper Development Association encourages architects, engineers, contractors and building officials to specify and require the use of B813 fluxes. All flux manufacturers make a B813 flux. B813 fluxes commonly available in California include:

- Everflux
- Harris Bridget
- Sterling
- Fry's Fire Eater
- LaCo Ultimate B813 Flux

SSMP APPENDIX D

Sanitary Sewer Standards of Practice
and
Sewer Lateral Testing Documents

SANITARY SEWER
STANDARDS OF PRACTICE

April 2009

Prepared by:

WINZLER & KELLY

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Approved by Ukiah City Council On: July 27**, 2009**
Approved by Ukiah Valley Sanitation District Board of Directors
On: _____, 2009

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Ukiah, CA 95482

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SEWER SYSTEM DESIGN STANDARDS

I. PURPOSE

The purpose of these Standards of Practice (SOP) is to provide guidelines for design of sewer utility projects and thereby reduce the time required for processing the plans. These guidelines do not include, but may reference, additional conditions which may be promulgated by all other pertinent ordinances, codes and official policy set forth by the City, or other government agencies. These guidelines establish minimum acceptable design criteria. More stringent requirements may be imposed by the City or District based on specific project conditions.

It is the responsibility of the design engineer to initiate written requests for approval of any design concepts that differ from these criteria, to verify additional requirements imposed, to perform any necessary calculations or studies, and to resolve specific design problems with the appropriate agency, department, or division.

II. REQUIREMENTS FOR IMPROVEMENT PLANS AND SUBDIVISION MAPS

A. Refer to Article 6 of the City's and District's wastewater ordinances.

B. Provide a detailed utility plan showing onsite and offsite sewer systems, and their connections to existing City or District sewer facilities. Show any septic systems existing or to be abandoned.

C. . Sewer system designs will, as appropriate, any off-site sewer that is required for the connection to an existing public main.

III. SEWER MAINS - GENERAL

A. Sewer systems will be designed in public streets whenever possible. When not in public streets, the following conditions apply:

1. Ductile iron pipe must be used from manhole to manhole when outside of roadways;

2. In general, lateral connections will not be allowed in easements but where necessary must be accessible and easy to locate; and

3. Lockable lids are required on all manholes located in easements, on school grounds, through parks and on any trunk sewers larger than 12-inch diameter.

B. Private sewer systems vs. public sewer systems:

In general, public sewer systems will be used only when they serve multiple lots and suitable access can be provided for maintenance reasons. Private sewer systems will only be used when they serve single lots or when they serve multiple lots and adequate access cannot be provided for private maintenance purposes.

C. Extent of sewer main improvements will be as follows:

1. Any offsite, downstream sewer system improvements needed to serve the project must be shown on the improvement plans, including upgrades to existing mains that may be required as a result of an approved capacity study or modeling effort.

2. In general, sewer mains must be designed across the full property frontage.

3. When a sewer main extension ends at a manhole and the sewer will be extended further in the future, include in the design a 3' long stub out of the manhole with a plug or cap for future connection.

D. Streets with both water and sewer mains must be at least 20 feet wide, face-of-curb to face-of-curb; one utility only: at least 16 feet wide; no water or sewer mains in alleys.

IV. CONNECTION TO AN EXISTING PUBLIC SEWER MAIN

A. Connect new mains to existing at existing manholes or by constructing a new manhole over the point of connection.

B. Where an existing sewer main is to be extended, remove the existing plug, cleanout, or rodding inlet and install a manhole. The main may be extended without installation of a structure only if it is on the same line and grade, the pipe size and material are the same, and the manhole spacing is adequate.

C. Elevations of mains connecting to existing sewer mains will be as follows:

1. Side sewer mains connecting to an existing main at an angle of 30 degrees or greater will be at least 0.1' higher than the existing invert elevation.

2. Connect sewer mains so that the crown of the smaller main is no lower than the crown of the larger main.

3. Connections to Trunk Sewers will be made so that the invert grade of the new main will be no lower than the crown of the Trunk Sewer.

D. Where laterals are the same size as the main, connection must be made with a manhole. Use a wye for all other lateral connections except as in "G" below.

E. For lateral connections to existing mains 12 inches and larger, use taps and saddles with watertight gaskets.

F. Lateral connections to Trunk Sewers 15 inches and larger are generally not allowed except with the specific approval of the City Engineer.

G. Approved alternatives for multiple connections, such as for grouped flag lots or multiple lots off private driveways are:

1. Up to 2 joint-trenched sewer laterals may be connected to the main using wyes at least 1' apart. (Taps or saddles where allowed must be a minimum 1' apart.)

2. A private main, 6-inches or larger in diameter, may connect to the public main at a manhole and extend to the services onsite. This alternative requires a joint maintenance agreement or homeowner's association, if serving more than one property.

H. Major streets, or where the street surface is less than 5 years old, installation methods other than open cutting may be required. The City Engineer will determine the requirements based on the condition of the existing street.

V. MATERIALS

A. Sewer service laterals will be Polyvinyl Chloride (PVC), SDR26 or SDR35, or Ductile Iron Pipe (DIP).

B. Sewer mains up to and including 12 inches will be PVC, SDR26 or SDR35, or DIP.

C. Materials for pipes larger than 12 inches will be approved by the City Engineer.

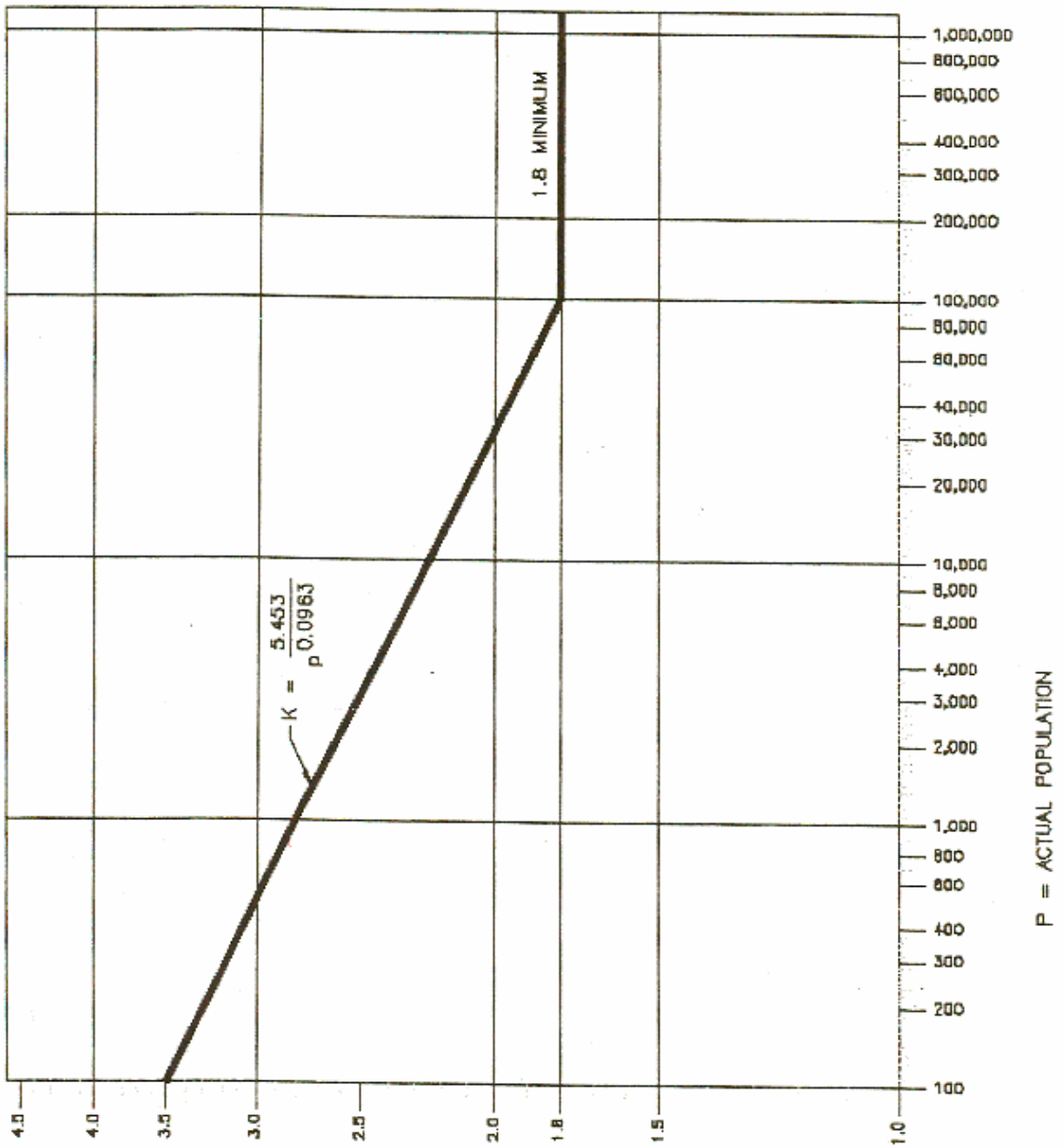
D. If a gravity sewer main is installed outside of a paved roadway, DIP and sewer identification tape is required.

E. In general, use the same pipe material from structure to structure.

F. Use of Asbestos Cement Pipe is not allowed under any circumstances.

VI. ALIGNMENT

A. Horizontal



K = RATIO OF PEAK TO AVERAGE SEWAGE FLOW RATE = (PEAK LOAD FACTOR)

SEWAGE PEAK LOAD
FACTOR vs POPULATION

1. Conform to the State of California, Department of Health Services, "Guidance Criteria for the Separation of Water Mains and Non-Potable Pipelines".

2. Horizontal separation from storm drains or other sewer mains will be a minimum five feet clear between pipes except at crossings.

3. Horizontal separation from other utilities, such as gas, underground electric, underground television cable, etc., will be a minimum of four feet clear between the pipes except at crossings.

4. In general, design public sewer mains in straight street sections to run parallel to the street centerline. All public mains must be a minimum five feet clear from all structures, building overhangs, gutters, property lines or edge of easements and 3 feet clear from all monuments, and/or lips of gutters. The alignment will be designed so that any 48-inch manhole shall be centered a minimum of 3 feet from the lip of gutter and any 60-inch manhole shall be centered a minimum of 4 feet from lip of gutter.

5. In curved streets, design the sewer alignment generally on one side of the centerline to allow installation of other facilities such as water, storm drains, etc. without using transverse crossings. Provide an alignment such that no part of the sewer main is less than 1 foot from the lip of gutter. Structures must be designed in accordance with subsection VI-A(4) above.

6. Horizontal curves in gravity sewer mains are not allowed.

7. All sewer main trenches that are parallel to and deeper than the footing of any adjacent structure must be at least 45 degrees from the footing as required in the International Plumbing Code. Any exceptions must be approved in writing by the City Engineer.

B. Vertical

1. Conform to the State of California, Department of Health Services, "Guidance Criteria for the Separation of Water Mains and Non-Potable Pipelines"

2. Generally provide a minimum of six inches of vertical separation from storm drains or other utilities, such as gas, underground electric, underground television cable, etc. When the minimum cannot be maintained, plans will indicate installation of felt expansion material or equivalent between facilities. To protect the sewer main from distorting under extreme loads, other measures, such as concrete encasement or ductile iron pipe, may be submitted for approval of the City Engineer.

3. Vertical curves in gravity sewer mains are not allowed.

VII. MAIN SIZING CRITERIA

A. Public mains will be sized to serve the entire tributary area at buildout densities conforming to the General Plan. Engineers for large developments may be required to provide trunk or collection system calculations or have a wastewater model run performed.

B. The design flows will be based on the following criteria:

1. Population density for all units will be 2.5 people per household. Average domestic flow will be 80 gallons per person per day.

2. Multiply average flow as determined by the Peak Load Factor from the graph "Sewage Peak Load Factor vs. Population," (Figure VII-A) to obtain the design base flow.

3. Public sewers will be designed to carry infiltration and inflow at the rate of 2.8 gallons per minute per tributary acre.

4. Single-family residences shall add 115% increase for future development.

C. Design all gravity sewers to achieve a minimum velocity of 2 feet per second (fps) using design flows. Lesser velocities require the approval of the City Engineer. When analyzing the existing or proposed sewer systems, use Manning's Formula to determine the design flow and velocity. Use n = 0.013.

1. The minimum size is 6 inches in diameter, though pipe diameters less than 8 inches require approval by the City Engineer or District Manager.

VIII. SLOPE OF SEWER MAINS

A. The sewer must be designed with a slope to be able to serve its entire tributary area. The preferred minimum slope for gravity sewers is 0.005. When conditions require, flatter slopes may be approved in accordance with the following:

The minimum slope for an 8-inch sewer is 0.0040.
The minimum slope for a 10-inch sewer is 0.0028.
The minimum slope for a 12-inch sewer is 0.0022.
The minimum slope for a 15-inch sewer is 0.0015.

B. The maximum slope for gravity sewers is 0.15, or 15' per 100'. In consideration of relevant factors such as steep terrain, steeper sewers may be allowed with the following conditions:

1. Use of restrained joints.

2. Provision of trench dams and drainage measures to prevent a buildup of hydrostatic pressure in trenches.

3. When a sewer with a slope greater than 0.15 passes through a structure with a horizontal change of direction in excess of 30 degrees, a special design of the base channelization is required to prevent overflows and yet allow for routine maintenance operations.

C. Slopes through manholes:

1. When sewers of uniform slope pass through a manhole, the slope will be maintained and the invert at the center of the manhole will be given.

2. When sewers change slope at a manhole, incoming and outgoing invert elevations will be given.

3. Provide sufficient drop through a manhole to compensate for energy loss caused by change of alignment. A minimum drop of 0.1 foot is required for a change of alignment greater than 30 degrees.

4. When pipe sizes change at structures, design the inlet crown at least as high as the outlet crown.

IX. SEWER MAIN/LATERAL COVER

A. Cover is the distance from the top of the pipe to final finished grade measured directly over the pipe.

B. Minimum cover for all sewer mains and laterals will be 36 inches. The City Engineer may approve shallower installations but in no case will cover be less than 24 inches.

C. Where cover is less than 36 inches, special construction techniques must be approved such as concrete encasement, use of ductile iron pipe, concrete cap over the trench or the use of controlled density backfill.

X. MANHOLES AND RODDING INLETS

A. A manhole is required at every horizontal or vertical change in alignment.

B. Maximum distance between manholes is 300 feet.

C. A manhole is required at the end of every main in excess of 200 feet in length.

D. Rodding Inlets may be installed in lieu of manholes at the end of a sewer main where the distance is less than 200 feet to the nearest manhole and the main size is 10 inches or less.

E. 60-inch diameter manholes are required for mains 18 inches or larger in diameter.

F. The manhole will be designed such that the angle in the horizontal plane between the downstream and any incoming sewer is a minimum of 90 degrees.

G. Stubs provided out of manholes for future extension will have rodding inlets provided when more than one length of pipe is installed or where service laterals are connected to the stub.

H. Private sewer mains must connect to the public main at a manhole.

I. Standard drop manhole installations are required when the difference in elevation between the incoming and outgoing sewer is greater than 2 feet. While not encouraged, drop manholes may be required due to some physical constraints. They may not however, be used to merely avoid extra depth of trenching unless unusual circumstances exist. Upstream slope changes should be used to avoid the need for a drop manhole.

J. When one drop connection is required, use a 60-inch diameter manhole. When two or more drop connections are required, use a 72-inch diameter manhole; however, the use of a multiple-drop manhole must be approved by the City Engineer.

K. Minimize the number of drop manholes.

XI. SEWER LATERALS

A. **P**rovide a separate lateral for each lot.

B. The minimum sewer lateral size is 4 inches. Sewer laterals will be sized according to requirements of the International Plumbing Code, the City Engineer, and determinations by the Design Engineer.

C. Sewer laterals will be located on the property frontage, defined as either the front or side boundary line of a parcel which abuts on a street.

D. Laterals will not be located in easements when gravity service can be provided to the property frontage.

E. When reasonable public vehicular access cannot be achieved, multiple lots may be served by a private main, providing approval by the Building Official is received and appropriate maintenance agreements are approved by the City or District.

F. The minimum slope of sewer laterals is 2% or l/4 inch per foot and will be designed at a depth sufficient to serve the entire building envelope of the parcel. Provide the slope and/or invert grade at the cleanout for any service lateral that must be installed at a slope and/or depth different from the minimums shown on the Sewer Standard Plans.

G. All sewer laterals, from property line or edge of easement to the point of connection with the main line or a manhole, will generally be perpendicular to the curb alignment or easement and will have an angle of intersection with the downstream section of sewer of no less than 90 degrees. No lateral alignments adverse to the flow of the main will be permitted.

H. Locate sewer laterals outside of driveway areas where possible and where driveway locations are known. In general, sewer laterals will be in the center third of lots when driveway locations are unknown and a minimum of 10 feet from trees whenever possible. For hillside development, place sewer laterals on the low side of property frontages when not in proposed driveway.

I. Sewer laterals serving lots or buildings with plumbing fixtures below the nearest upstream sewer manhole rim require an approved backflow prevention device.

XII. ABANDONMENT OF SEWER MAINS AND SERVICES

A. Any existing sewer mains and service laterals that will not be used must be abandoned and the following must be noted on the Improvement Plans:

1. Sewer mains that are to be abandoned will be securely closed at all pipe ends with a cap or at manholes with a concrete plug. Mains 12 inches and larger must be filled with sand slurry or other suitable material per current City/District Standards.

2. Sewer laterals in streets that have been constructed or overlain within the last five (5) years will be plugged behind the curb line or outside the edge of pavement.

3. Sewer laterals in streets that have not been constructed or overlain in the last five (5) years will be abandoned by excavating at the main, removing the wye, and repairing the main per current City/District Specifications. If the connection to the main is a tap or saddle, it will be removed and a full circle repair clamp installed. When a wye is removed that is within 18 inches of a pipe joint, the repair will be extended to include the joint.

XIII. EASEMENTS

A. An easement must be provided over any public sanitary sewer when it is installed outside a public right-of-way.

B. The easement must be a minimum of 10’ wide if it only contains a sewer main or 20' wide if it contains another facility, such as water, storm drain, or other utility. The easement will be dedicated as a "public sewer easement" or a “public utility easement”.

C. Easements must be configured to encompass all publicly-maintained appurtenances, such as service laterals up to the cleanout, and will be generally centered over the facility. Separate access easements may be required depending on site conditions. When sanitary sewers are to be installed along a property line the easement will be wholly contained on one parcel.

D. All property restrictions placed as a result of dedication of easements will be so noted on the supplemental sheet of the Subdivision Map, or on the Easement Deed if the easement is not dedicated as part of a subdivision. Typical required notes as applicable are:

    1. No structures may encroach on, above, or below the surface of the ground in any public easement. This includes footings of foundations, eaves from the roof of any adjacent structure, pools, ponds or outbuildings on slabs or foundations. Decks, sheds, or other structures which may be easily removed for maintenance of the sewer system may be allowed at the discretion of the City Engineer.

    2. No trees may be planted in a public sewer easement without first obtaining approval of the City Engineer. Trees may be allowed to the extent that damage to the sewer system does not occur from root intrusion and adequate access can be provided for maintenance and repair vehicles.

    3. The City/District will take due caution when performing maintenance or repair of sewer systems in easements, but will not be responsible for repairs or replacement of trees, landscaping or structures not specifically approved by the City Engineer.

XIV. ACCESS ROADS

A. Clear access must be provided and maintained to all structures on the sewer system:

1. All-weather vehicle access roads are required to every structure on the sewer system. Access roads must be a minimum of 10’ in width and must be provided with turnarounds as directed by City Engineer.

2. The design of access roads must be included with the sewer system design plans. Include adequate drainage measures in the design to prevent damage to the access roads from storm water.

3. Gates must be provided for access through any fence crossing a public sewer easement. Where vehicular access is required for maintenance, minimum 14' wide gates must be provided with sliding gates preferred. Where vehicular access is not required, 4' wide gates for pedestrian access must be provided and will be located to permit visual access between sewer structures.

4. The maximum grade allowed at any point on an access road is 15%. The maximum cross-slope for any access road is 5%.

SEWER SYSTEM STANDARD DRAWINGS

STD No.	Title	Approved
200	Sewer Construction Notes	December 1987
201	Standard Sewer Manhole	December 1986
203	Sewer Clean-out	January 1987
204	Manhole Frame and cover Detail	January 1987
210	Sewer Service Lateral (Initial Construction)	January 1987
213	Sewer Service Lateral (Property Line to Building)	March 1987
215	Single Family Dwelling Private Force Main	May 1956
218	Multi-Sewer Connections	December 1990
220	Trench Detail Service Lateral/Sewer Main	February 1999
222	Joint Trench Outside Public Right-of-Way	June 1996
	Two-Stage Grease Interceptor	
	Food Facility Enclosure	

SEWER SYSTEM CONSTRUCTION STANDARD SPECIFICATIONS

SECTION 200 - SEWERS

200-1.02 Materials

Sewer pipe to be installed shall be ductile iron pipe or polyvinyl chloride pipe as noted on the Plans and as specified herein. Asbestos cement pipe shall not be allowed.

200-1.02A Polyvinyl Chloride (PVC) Pipe

PVC solid wall sewer pipe and fittings for gravity sewer shall be made from all new, rigid, un-plasticized polyvinyl chloride in accordance with ASTM Standard Specifications D3034 and F679 and shall have a wall thickness of at least SDR 35. Joints shall consist of an integral thickened bell-and-rubber ring and shall provide for expansion and contraction at each joint. The rubber ring shall be compatible with the pipe manufacturer's recommended lubricant.

All pipe shall have a home mark to indicate full penetration of the spigot when the joint is made.

All PVC pipe entering or leaving a concrete structure shall have a standard manhole gasket, as supplied by the pipe manufacturer, firmly clamped around the pipe exterior and cast into the structure base or near the structure wall center as a water stop.

200-1.02B Restrained Joint (PVC) Pipe and Fittings

Restrained joint PVC pipe and fittings shall conform to the requirements of ASTM D2241. Joints shall be gasketed and conform to the requirements of ASTM D3139 and ASTM F477.

200-1.02C Ductile Iron Pipe

Ductile iron pipe shall be cement lined, new pipe conforming to ANSI A 21.51-197s or most recent issue, if any as sponsored by the American Water Works Association (AWWA) for thickness Class 50 Ductile Iron Pipe. The pipe shall be furnished with either bell and spigot ends, "Tyton Joints", or mechanical joints, except where specifically specified on the Plans.

All ductile iron pipe buried underground shall be encased in polyethylene film in the tube form. Polyethylene material and installation procedure for the encasement shall conform to ANSI/AWWA C105/A21.5-82 or most recent issue, if any.

Couplings for connection to the sewer main shall be of a type approved by the City Engineer.

200-1.02D Ductile Iron Restrained Joint Fittings

Restrained joint fittings shall be ductile iron in accordance with applicable requirements of ANSI/AWWA C111/A21.11 and ANSI/AWWA C153/A21.53 of latest revision and shall be compatible with the type and pressure class of pipe used.

71-1.03 Excavation and Backfill

Backfill shall be in accordance with Sewer Standard Drawing No. 220.

Sheet piling and other sheeting shall be withdrawn in such a manner as to prevent caving at the walls of excavations or damage to piping or other structures. Except as may be hereinafter modified, no sheeting shall be left in the trench and no backfill shall be made against the sheeting before it is removed. Any sheeting extending below the invert of the pipe shall be left in place by cutting off in a manner satisfactory to the Engineer.

Trenching operations shall be conducted in such a manner not to disturb the existing curb and gutter and the existing utilities. Flow shall be maintained in any sanitary sewers, storm drains, water lines, or water courses encountered in trenching.

The Contractor shall remove all water which may accumulate in the excavation during the progress of the work. Trenches shall be kept free from water while the pipe or other structures are installed and until backfilling has progressed to a sufficient height to anchor the work against possible flotation or leakage. At all times, the Contractor shall have sufficient pumping machinery available for immediate use. Water shall be disposed of in such a manner as to cause no injury to public or private property, or be a menace to public health.

Blasting will not be permitted unless the Contractor has obtained special written permission from the Engineer. The blast area shall be covered with heavy timbers or mats unless otherwise authorized by the Engineer. Blasting shall not be done within 25 feet of pipe laid in a trench. The Contractor shall protect pipe already laid with an earth backfill. All blasting and the use, handling and storage of explosives shall be in strict accordance with the applicable provisions of the State of California, Department of Industrial Relations Construction Safety Orders, and the Standard Specifications.

When the public works involved will exceed an estimated $25,000, for the excavation of any trench or trenches five feet or more in depth, the Contactor shall, except for subdivisions, submit to the City Engineer for acceptance in advance of job excavation, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation of such trench or trenches. If such plan varies from the shoring system standards established by the construction safety orders, the plan shall be prepared by a registered civil or structural engineer. A permit to do the above described work must be obtained from the State of California, Division of Industrial Safety. Proof of such permit shall be submitted to the Engineer prior to starting the trench work.

All trench excavation materials from trenches shall be the property of the Contractor. None of the excavation material shall be disposed of on the work site. Prior to disposal of any material, the Contractor shall submit to the Engineer written authorization for such disposal of material and entry permission signed by the owners of the disposal site, and shall comply with any other requirements of disposal, such as City and County permits, as may be required.

All raised pavement markets, street striping, chatter bars or any other traffic markings disturbed during this contract work shall be replaced in kind by the Contractor to the satisfaction of the Engineer.

Full compensation for excavation and furnishing and placing backfill and asphalt surfacing and replacement of pavement markets, street striping or any other traffic markings and including replacement of traffic detector loops shall be considered as included in the prices paid for the various contract items of work and no additional allowance will be made therefore.

All cutting, handling and disposal of asbestos cement pipe shall be done in compliance with the Contractor's State Licensing Law and all other applicable laws and regulations.

Full compensation for cutting, handling and disposal of asbestos cement pipe shall be considered as included in the prices paid for the various items of work and no additional allowance will be made therefore.

200-1.03A Trench Bracing and Shoring

All bracing and shoring shall conform to Section 5-1.02A and Section 7-1.01E of the Standard Specifications and the Division of Industrial Safety Construction Safety Orders which are currently in use.

The Contractor shall take all necessary measures to protect the workmen and adjacent areas and structures from the hazards of the trenching or excavation operations.

200-1.04 Existing Manholes

Existing manholes and cleanouts located within the street right-of-way shall be adjusted to conform to finished pavement grades in accordance with the details shown on the Plans.

Prior to the removal of an existing manhole frame, a platform shall be constructed in the manhole above the top of the sewer to prevent any dirt or debris from falling into the sewer. The platform shall remain in place until all work on the manhole has been completed and the asphalt concrete has been placed around the manhole. Prior to the removal of the platform from the manhole, all dirt and debris shall be removed.

Lowering of the manhole ring and cover shall be accomplished by the removal of existing concrete grade rings below the manhole ring or by removing the upper section of manhole barrel and substituting therefore a shorter section of barrel.

At the Contractors option, in lieu of removing and replacing barrel sections as above provided, the top of the existing upper barrel section may be trimmed and the taper section replaced on such trimmed surface provided, however, that such trimming shall not crack or otherwise damage the remaining portion of barrel section.

In the event that the portion of barrel section to remain is cracked or damaged or otherwise made unsuitable for use by such trimming, the entire section shall be removed and replaced with a new section of barrel.

Trimming of taper sections is not permitted.

All sections of the manhole shall be set in cement mortar or in approved gasket material. Trim excess gasket material and plaster inside joints smoothly. Manhole sections set in cement mortar shall be smoothly plastered inside and out.

After placing the surface course of asphalt concrete, all manholes and cleanouts shall be located and marked with white paint before the close of that working day.

Within two working days of paving, all manholes and clean out shall be adjusted to grade and inspected.

Existing grade adjustment rings in the adjustment of manhole frames shall become the property of the Contractor and, if undamaged and thoroughly cleaned of mortar, may be reused in the work. If not so used, they shall be disposed of away from the site of the work at the expense of the Contractor.

200-1.05 Pipe Laying

Where groundwater occurs, pumping shall continue until back filling has progressed to a sufficient height to prevent flotation of the pipe. Water shall be disposed of in such a manner as to cause no property damage or not be a hazard to public health.

Where construction consists of constructing a new main or extension of an existing main, the downstream end of the new main shall be securely closed with a tight fitting plug until the construction is accepted by the Engineer.

If the new sewer main is connecting to an existing main at a location other a manhole, the Contractor shall pothole the existing sewer main to verify invert grades and locations.

Sewer pipe shall be installed on the alignment and grade as shown on the Plans and in accordance with the Standard Specifications and as specified herein and as directed by the Engineer. Existing sewer laterals shall be removed and replaced at the locations shown on the Plans, or as directed by the Engineer.

Sewer pipe shall be laid in straight lines and on uniform rates of grade between points where changes in alignment or grade are shown on the Plans. The interior of the pipe shall be free of foreign matter before lowering into the trench.

The pipe manufacturer's written instructions covering the installation of his pipe shall be closely followed unless otherwise directed by the Engineer or as specified herein. After each pipe section is laid, the pipe joints shall be checked by the Contractor with a feeler gauge to determine if the rubber ring is properly seated. The trench shall not be backfilled until authorized by the Engineer. Pipe laying shall proceed upgrade with the spigots pointing in direction of flow. The invert of the pipe shall be set at required line and grade as determined from batter boards set not over 25 feet apart.

Electro-optical grade setting devices may be used provided the Contractor certifies that the device will be operated by a person proficient in its operation.

Any section of pipe found to be defective or which has had grade or joints disturbed shall be re-laid by the Contractor at his expense.

Proper implements, tools, and facilities satisfactory to the City Engineer shall be provided and used by the Contractor for the safe and efficient execution of the work. All pipe, fittings, and accessories shall be carefully lowered into the trench by means of derrick, ropes, or other suitable equipment in such a manner as to prevent damage to pipe and fittings. Under no circumstances shall pipe or accessories be dropped or dumped into the trench. The pipe and accessories shall be inspected for visible defects prior to lowering into trench. Any visibly defective or unsound pipe shall be replaced.

The line and grade of existing utilities shall not be altered. Any leakage caused in existing utilities by reason of the Contractor's operations shall be immediately repaired at the Contractor's expense.

Existing storm drains shall be supported or removed and replaced at the Contractor's option. In any case, the Contractor shall be responsible for maintaining the existing line and grade of the storm drains. If the Contractor elects to remove and replace, backfill shall be in conformance with Standard Drawing No. 420.

Existing water lines shall be supported in place with service maintained during construction. The Contractor shall be responsible for any damage to the water lines during construction and any damage resulting from improper backfilling.

Existing sewer lines shall be supported in place with service maintained during construction. The Contractor may, at his option, remove and replace any sewer laterals which are not in use during construction. The Contractor shall be responsible for damage to sewer lines during construction and any damage resulting from improper backfilling.

Sewer lateral inverts shall be set above the mid point of the sewer main.

200-1.06 Sewer Laterals

All sewer laterals shall be installed per Sewer Standard Drawing Nos. 210 and 213.

All sewer laterals shall have the PVC female adapters on the cleanouts glued to the cleanout standpipes.

The estimated locations of the existing laterals shown on the Plans are based on record information, and television inspection, and field evidence. During construction of the new sewer main, and prior to the installation of wyes for the new sewer laterals, the Contractor shall determine the exact locations for connection to existing sewer laterals at the back of sidewalk by either of the following methods:

1. Removing sidewalk and potholing by hand digging at back of sidewalk to locate the existing lateral pipe a minimum of 24 hours prior to sewer main installation in that area.

2. Inserting a metallic electrician's "fish tape" into the existing lateral pipe after the lateral pipe is exposed during sewer main excavation and tracing the "fish tape" to the back of sidewalk using conductive locating equipment such as an M-Scope.

Active sewer laterals are to remain in service at all times and shall be connected to the new sewer main as the main is being constructed. When a new sewer main is not installed on the same alignment as the existing sewer main, temporary connections between the new sewer main and existing sewer shall be installed.

Temporary sewer lateral connections shall be replaced with permanent laterals after installation of the sewer mainline is completed for each block, or at a maximum of 20 calendar days, whichever is sooner.

A minimum separation of 3 feet shall exist between new sewer laterals and existing water services. If separation is less than three feet, a new water service shall be installed at least 5 feet from any sewer lateral and the existing water service shall be abandoned.

200-1.07 Sewer Structures

Manholes shall be standard precast concrete manholes as detailed on Sewer Standard Drawing No. 201, and as shown on the Plans. Mains larger than 18" in diameter require 60" diameter manholes. Precast concrete manhole bases must be approved by the City Engineer.

Manhole bases may be poured-in-place concrete on undisturbed earth. The bases shall be poured full thickness against the side of the manhole excavation or to dimensions shown on Sewer Standard Drawing No. 201. The manhole excavation site shall be dewatered before pouring.

Pre-cast manhole bases, conforming to Sewer Standard Drawing No. 201 in dimensions and the requirements outlined below for materials may be used. Such pre-cast bases shall be placed on a minimum 6-inch thick cushion of drain rock, as specified in Sewer Standard Drawing No. 201. The drain rock shall extend a minimum of 6 inches beyond the outside edges of the base.

Concrete for manhole bases shall be class “A” Portland cement concrete conforming to the applicable requirements of Section 90 of the Standard Specifications. The Portland cement shall be Type V conforming to ASTM Designation: C 150 or low-alkali-Type II cement meeting the requirements for Type V cement.

Where steel reinforcement is required in manhole base construction, such reinforcement shall be furnished and placed as shown on the Plans and in accordance with the applicable provisions of Section 52 of the Standard Specifications.

The base slab and initial riser section shall be connected with integrally poured concrete to create a watertight joint. Flow channels shall be constructed as shown on the Plans. Changes in size or grade shall be made gradually and changes in direction by smooth curves. All finished surfaces shall be smoothly troweled with a steel trowel. All manhole barrels and taper section shall be precast concrete sections using Type V Portland cement complying with ASTM Designation: C 150 or low-alkali Type II cement meeting the requirements for Type V cement.

The 48-inch and 60-inch diameter barrels and taper sections shall be constructed in accordance with the applicable provisions of ASTM Designation: C 478 and shall be inspected by the City Engineer to determine that the interior surfaces are smooth and free of pockets or depressions.

Manhole frames and covers shall be in accordance with Sewer Standard No. 204. Tops of manhole frames and covers shall be set accurately to finished grade in paved streets and one foot above finished grade in unimproved areas. The frames shall be evenly set on the manhole on a Portland cement mortar bed. Where manholes are set above finished grade, the earth shall be mounded up around the manhole in a neat and acceptable manner to the satisfaction of the Engineer.

At locations where sewer is to be installed into or out of existing manholes, the manhole wall and base shall be chipped to accept the new size of pipe and to form a flow channel in the manhole

base. The Contractor shall dry pack around the pipe between the pipe and the chipped out opening. The Contractor shall also backfill in the area around the pipe with concrete to insure a watertight connection.

All joints in manholes shall be sealed by means of a preformed, self-bonding, self-sealing plastic gasket, such as "Ram-Nek" manufactured by the K.T. Snyder Company, Houston, TX, or approved equal. Joint seals shall be installed in full compliance with the manufacturer's current recommendations.

200-1.08 Testing of Sewers

Testing of all portions of the sewer including manholes is required.

For either exfiltration or infiltration test, the maximum leakage shall not exceed 25 gallons per inch of pipe diameter per mile per 24 hours as measured over a period of 30 minutes minimum. Should the leakage exceed the maximum allowable rate, the Contractor shall repair, overhaul, or rebuild the defective portion of the sewer line to the satisfaction of the City Engineer at no additional cost to the City or District. After repairs have been completed by the Contractor, the line shall be retested as specified above, all at no cost to the City or District.

Manholes shall be tested per the Sewer Standard Drawing No. 200 guidelines. During the test, manholes shall be filled with water the rim of the frame casing and shall lose no more than 2 inches over a period of 30 minutes.

The test shall be performed after the line has been laid and all backfill placed and compacted as specified elsewhere in these specifications. The Contractor, at his option, may test the line at any time during construction. However, the final test for acceptance shall be made only after all backfill is in place and compacted.

In the event the exfiltration test prescribed above is impractical due to wet trench conditions, these portions of the sewer line where such conditions are encountered will be tested for infiltration. The Engineer shall determine whether the exfiltration or infiltration test will be used.

Even though the test for leakage is within the prescribed limits, the Contractor shall repair any obvious leaks.

Low pressure air testing may be used in lieu of water testing at the option of the Contractor. Water testing may be required by the Engineer. The following procedure shall be used for air testing:

1. Clean pipe to be tested by propelling a snug-fitting inflated rubber ball through pipe with water. Remove any debris.

2. Plug all pipe outlets with suitable test plugs. Brace each plug securely.

3. If the pipe to be tested is submerged in ground water, insert a pipe probe, by boring or jetting, into the backfill material adjacent to the center of the pipe, and determine the pressure in the probe when air passes slowly through it. This is the back pressure due to ground water submergence over the end of the probe. All gauge pressures in the test should be increased by this amount.

4. Add air slowly to the portion to the pipe installation under test until the internal air pressure is raised to 5.0 psig.

5. Check exposed pipe and plugs for abnormal leakage by coating with a soap solution. If any leakage is observed, bleed off air and make necessary repairs.

6. After an internal pressure of 5.0 psig is obtained, allow at least two minutes for air temperature to stabilize, adding only the amount of air required to maintain pressure.

7. After two minute period, disconnect the air supply and start stopwatch. The pressure of 5 psig shall be maintained for 5 minutes.

200-1.08A Television (CCTV) Inspection

The Contractor shall hire an independent television inspection service to perform a closed-circuit television inspection of all newly constructed sewers. A digital video disk (DVD) of the television inspection shall be produced and delivered to the Engineer in color DVD format, together with a typed log of the inspection.

The following conditions shall exist prior to the television inspection:

1. All sewer lines shall be installed, backfilled and compacted;

2. All structures shall be in place, all channeling complete and all pipelines accessible from structures;

3. All other underground facilities, utility piping and conduit within two feet of the sewer main, shall be installed;

4. All compaction required shall be completed;

5. Pipelines to be inspected shall be balled, flushed and mandrel tested;

6. The final air or water test shall have been completed; and

7. Immediately before the television inspection, run fresh water into the sewer until it passes through the downstream manhole.

When the above work has been completed, the Contractor shall notify the Public Works Inspector 48 hours in advance of the date for television inspection. During this inspection, the Contractor or his authorized representative shall be present to observe the video pictures as provided by the television camera.

The following videotape observations shall be considered defects in the construction of the sewer pipelines and will require corrections prior to acceptance:

1. Off grade – 0.08 foot, or over, deviation from grade;

2. Joint separations – over 3/4";

3. Offset joints;

4. Chips in pipe ends – none more than 1/4" deep;

5. Cracked or damaged pipe or evidence of the presence of an external object bearing upon the pipe (rocks, roots, etc.);

6. Infiltration;

7. Debris or other foreign objects; and

8. Other obvious deficiencies when compared to Approved Plans and Specifications, these Standards and Standard drawings.

The Contractor shall be notified in writing of any deficiencies revealed by the television inspection that will require repair, following which the Contractor shall excavate and make the necessary repairs and request a television re-inspection. Television re-inspection shall be at the Contractor's expense.

200-1.09 Trench Resurfacing

Trench resurfacing shall be as shown on Sewer Standard Drawing No. 220, "Trench Detail Service Lateral /Sewer Main" of the Standard Plans.

200-1.10 Measurement

Quantities of precast concrete manholes and street cleanouts will be determined as units from actual count and shall be complete with manhole frames and covers and cleanout frames and covers, and as otherwise specified in the Standard Details.

No separate measurement or payment will be made for excavation and backfill, or for concrete, or for trench resurfacing involved in the construction of sewers.

200-1.11 Payment

Trench bracing and shoring for sewer systems will be paid for at the contract lump sum price, which price shall include full compensation for furnishing all labor, materials, tools and equipment, and doing all work involved in trench bracing and shoring, and no additional allowance will be made therefore.

The quantity of pipe to be paid for will be the actual length placed, measured from center of manhole to center of manhole along the pipe slope to the nearest foot. Pipe placed in excess of the length ordered by the Engineer will not be paid for.

Sewer pipe will be paid for at the contract price per lineal foot, which price shall include full compensation for furnishing all labor, materials, tools and equipment, and doing all the work involved in furnishing and installing the sewer pipe complete in place including excavation, bedding, backfill, trench surfacing, testing, television inspection, connecting and plugging sewer lines where shown on the Plans, compacting, any relocation of existing facilities, protection of pipe from damage during other phases of the work, and any other item necessary to place the sewer line and not specifically enumerated in the Plans or these specifications, and no additional allowance will be made therefore.

Full compensation for removing and replacing or supporting existing utilities and for abandoning existing sewer and sewer manholes shall be considered as included in the contract prices paid per lineal foot for sewer pipe and no additional allowance will be made therefore.

Manholes will be paid for at the contract price each, which price shall include full compensation for furnishing all labor, materials, tools and equipment, and doing all the work involved in constructing manholes complete in place including excavation, backfill, concrete collar, and furnishing and installing cast iron frame and cover, and no additional allowance will be made therefore.

Full compensation for sewer trench excavation, disposal of excavation, removal of water, blasting, pavement removal, scoring, and any other necessary work involved in sewer trench excavation, shall be considered as included in the contract price paid per lineal foot for sewer pipe and no additional allowance will be made therefore.

Full compensation for trench surfacing including furnishing and placing aggregate base, asphaltic paint binder, asphalt concrete and applying water, all as specified herein, shall be considered as included in the contract prices paid per lineal foot for sewer pipe, and no additional allowance will be made therefore.

Sewer laterals will be paid for at the contract price each, which price shall include full compensation for furnishing all labor, materials, tools and equipment and doing all the work involved in replacing existing sewer laterals and constructing the one-way cleanout, including locating the existing laterals, tying-in the existing laterals behind the one-way cleanout, installing flexible couplings, removal and disposal of existing cleanouts, excavation, bedding, backfill, trench surfacing, testing, television inspection, protection of the pipe from damage during other phases of the work, setting the sewer cleanout box to grade, restoration/reconstruction of sidewalk/landscaping, and any other items necessary to place the laterals and cleanouts not specifically enumerated in the Plans or these specifications, and no additional allowance will be made therefore.

SEWER SYSTEM APPROVED MATERIAL

Standard 201 – Standard Sewer Manhole

Precast base
Cook Concrete Products, Inc.
Central Precast Concrete, Inc.

Connectors
A-Lok X-Cell
NPC Kor-N-Seal

Note: The City will require shop drawings submitted for approval.

Standard 203 – Sewer Clean-out

Frame and Cover

Phoenix Iron Works	
Pinkerton Foundry	A-211 Cast Iron
South Bay Foundry	SBF-1249

Figure A1 Frame and Cover

Phoenix Iron Works	P-2501

Standard 204 – Manhole Frame and Cover Detail

Phoenix Iron Works	P-1090
Pinkerton Foundry	A-640
South Bay Foundry	SBF-1900 CPH

Standard 210 – Sewer Service Lateral (Initial Construction) and Standard 213 – Sewer Service Lateral (Property Line to Building)

Pipe
Cast Iron Pipe
PVC – SDR 35

Cleanout Box

Geneco	CC4 or CC6 with lid marked sewer

Saddle or Taps

Geneco	Sealtite
Romac	Style “CB” Sewer Saddle

STANDARD OPERATING PROCEDURE FOR SEWER SYSTEM

Objective:

The specific objective of this Standard Operating Procedure is to eliminate obstructions, improve flow characteristics and ensure that sewer collection system is clean and open. All sanitary sewer lines and manholes shall be cleaned annually. Known critical areas included in the "Sewer Maintenance List" (SSMP – Appendix 4-A) shall be inspected and cleaned every month.

Required Equipment and Tools:

- Personal protective equipment (i.e., hardhat, safety vest, steel toe boots, gloves, eye/face protection, hearing protection)
- Proper safety cones/barricades/flagging/signs or other traffic control devices
- Confined space equipment – tripod, harness, and ventilation blower
- Calibrated gas detector
- Sewer (jetter/evactors) truck
- Sewer cleaning nozzle and root saws
- Six-wire skid ("proofer") in sizes that will be encountered during the day
- Debris traps in the sizes that will be encountered during the day
- Manhole hook or pick-axe
- Measuring wheel
- Disinfectant
- Light stand
- Hose

Required Documents:

- Sanitary sewer base map
- Sewer Maintenance List
- CCTV inspection form
- Manhole inspection form
- Cleaning schedule

At Corporation Yard:

- Check overall condition of sewer truck:
    - Fluid leaks on ground
    - Tires
    - Water Tank
    - Water Pump
    - Lights, brake, turn signal and hazards
- Inspect the truck equipment (tubes, clamps, hooks, nozzles, etc.) for damages or missing parts. Replace equipment that is excessively worn.

- Inspect the first 200 feet of hose and couplings for damage or wear.

Starting-Up at the Jobsite:

- Determine and confirm location of upstream and downstream manholes (use street addresses, if possible).
- Look for any overhead utilities that may come into contact with the vacuum boom during the cleaning operation.
- Set up proper traffic control by placing traffic signs, flags, and safety cones around the vehicle. The safety cones shall be placed with at least 15 to 20 feet of space from the rear of the truck and 4 feet beyond the front of the truck. Turn on the arrow board to direct/notify traffic of your status. ***"It is always more important to do the job safely than quickly."***
- During the course of working, make sure that all warning lights and the arrow board are operating properly and the arrow flashing to send traffic towards the open lane.

A. Sewer Pipe Cleaning

- Fill water tank at or near the first jobsite.
- Helper is to ground guide the driver/operator to align rear of vehicle over dry, downstream manhole.
- Pull the manhole lid and use the gas detector to determine if it is safe to proceed with the cleaning operation.
- Observe sewer flow in the manhole. In any event of slow running sewers or possible backup of manhole, notify your immediate supervisor of this situation so that corrective action can be taken.
- Choose the right nozzle for the job.
    - A 15 degree nozzle is used for high grade, long lines and when penetrating blockages.
    - A 30 degree nozzle is best for cleaning due to the jets of water hitting the wall more directly and closer to the nozzle.
- Attach penetrating nozzle (or root saw) to the hose.
- Turn on the system and operate at safe speed.
- Lower the hose, with a guide or roller to protect the hose, into the manhole and direct it into the sewer line to be cleaned.
- Start the high pressure pump and adjust the pressure depending on depth of manhole, nozzle used and nature of the work being done. Shallow lines require less pressure than deep lines.
- Allow hose to feed itself through the line at moderate pace (not to exceed 3 feet per minute). It may be best to feed hose about 50 feet and bring it back.
- Observe the nature and quantity of the debris removed during the cleaning operation.
- Continue to clean the line until nothing but clear water comes through the line while bringing the nozzle back to the starting position.

- Remove the debris out the manhole until no more debris comes back with the return of the cleaning nozzle.
- Lift the upstream manhole and verify that the nozzle has reached it.
- When the end of the run is reached, pull the hose back.

NOTES:

- *The intent of sewer cleaning is to remove foreign materials from the lines and restore the sewer to a minimum of 95% of the original carrying capacity, or as required. It is recognized that there are some conditions such as broken or damaged pipe and major blockages that prevent cleaning from being accomplished or where additional damage would result if cleaning were attempted or continued. If such conditions occur, the crew shall contact Water/Sewer Maintenance Supervisor immediately and advise him/her of the situation.*

- *Material removal such as sludge, dirt, sand, rocks, grease, and other solid, or semi-solid, material resulting from the cleaning process shall be removed from the jobsite.*

B. Sealing Manhole Cover for Noise or Odor Control

- Pull the manhole lid and use the gas detector to determine if it is safe to proceed with the cleaning operation.
- Sweep ring of manhole with a broom.
- Get out caulking gun and cartridge of roof cement.
- Cut tip off cartridge. Puncture seal in tip.
- Load cartridge into caulking gun.
- Squeeze trigger of caulking gun until black caulk starts to come out.
- Squeeze 3-4 large beads of caulking around manhole ring.
    - If the purpose of sealing the manhole cover is to control the odor, squeeze out a bead of caulking around the entire ring of manhole.
- Secure the manhole cover back into the manhole ring and close manhole.
    - If the purpose of sealing the manhole cover is to control the odor, after closing the manhole, squeeze out caulking in holes on top of manhole cover.

C. Replacing Manhole Cover

- Measure diameter and thickness of manhole cover.
- Check if the manhole cover is a safety concern. If it is, place barricades around it.
- Proceed to the warehouse or corporation yard for a replacement.

Leaving the Jobsite

- Close the manhole. Ensure that the manhole is properly seated.
- Secure equipment.
- Fill out the required forms.
- Pick the cones up in reverse. Pick up the cones in front of the truck first, then the cones on the side of the truck. Finally, pick up the cones to the rear of the truck. The cone that is farthest away is the last cone to be picked up.
- Move to the next jobsite.

At the End of the Day

- Inspect the equipment and tools for problems.
- Report any problems with equipment, tools, or sewers that were cleaned during the day to the Water/Sewer Maintenance Supervisor.
- Submit daily work reports to the Water/Sewer Maintenance Supervisor at end of shift.

Public Works Department
300 Seminary Avenue
Ukiah, CA 95482
Web: www.cityofukiah.com

Phone: (707) 463 -6200
Fax: (707) 463-6204

SEWER LATERAL TESTING PERMIT APPLICATION

Date:			Permit Number:
Property Address:			AP Number(s):
Property Owner:	Phone No:		E-mail Address:
Property Owner Mailing Address:	City:		State/Zip:
Phone No:	Fax No:		E-mail Address:
Contractor Name:	Phone No:		Fax No:
Contractor Address:	City:		State/Zip:

Testing Required due to the Following:

☐ Qualifying Service Call ☐ Remodel $100,000 or more ☐ Bedroom Addition

☐ Change of Property Use ☐ Sanitary Sewer Overflow ☐ Rehabilitation/Replacement of Sewer Main

☐ Addition of 2 Drain Fixture Units or greater to building/site plumbing

Type of Inspection or Testing Proposed :

☐ CCTV Inspection ☐ Exfiltration Testing ☐ Other:

To the best of my knowledge, the information submitted herein is true and correct.

Signature:	Date:

When approved, a permit to perform the Sewer Lateral Testing will be issued to the property owner/contractor. The contractor performing the test shall schedule an inspection with the City Inspector a minimum of 48 hours prior to testing. An inspection may be scheduled by calling 467-2813

Staff Use Only

City of Ukiah **U.V.S.D.**

Approved By:	**Date:**

Payment Received by:	**Date:**	

Return original to Sewer Lateral Program Coordinator/Provide a copy to Property Owner or Contractor

RECORDING REQUESTED BY:
Director of Public Works - City of Ukiah
AND WHEN RECORDED MAIL TO:
Director of Public Works
City of Ukiah
300 Seminary Avenue
Ukiah, CA 95482

SEWER LATERAL CERTIFICATE OF COMPLIANCE

This certificate is issued by the undersigned [check one] ☒ pursuant to Ukiah City Code Sections 3799.4-3799.6 after passing a sewer lateral inspection or ☐ without an inspection pursuant to Ukiah City Code Section 3799.7.

The undersigned certifies that the sewer lateral serving the property described below complies with the sewer lateral standards adopted by the City of Ukiah and is in compliance with Division 4, Chapter 2, Article 18 of the Ukiah City Code, regulating the inspection, testing, repair and replacement of sewer lateral in the City of Ukiah.

Property Owner(s) Name:

Property Address:

Assessor's Parcel No.:

Legal Description of Property Served by Lateral: **"See Exhibit A, attached hereto and incorporated herein by reference".**

Applicant Name: Application No. Application Date:

Certificate of Compliance Number: **SLCC-Permit#**

Date Issued:

Date Certificate Expires:

☐	Testing and inspection confirms that the sewer lateral is in compliance with the requirements of Article 18.	
☐	The sewer lateral has been replaced or repaired and the plumbing permit has received final approval and acceptance.	
☐	The sewer lateral is exempt from the testing and inspection requirements of Article 18 for the following reason:	
	☐	The property owner provides evidence, satisfactory to the Director of Ukiah Public Works, that the building on the property is ten (10) years old or less
	☐	The property owner provides evidence, satisfactory to the Director of Ukiah Public Works, that the sewer lateral was repaired or replaced and passed inspection within the previous ten (10) years
	☐	The property owner provides evidence, satisfactory to the Director of Ukiah Public Works, that the lateral has passed an inspection within the past five (5) years

APPROVED FOR ISSUANCE AND SUBMITTAL FOR RECORDATION

_____
Public Works Director or Authorized Agent
Ben Kageyama

ACKNOWLEDGEMENT

State of California)

County of Mendocino)

On _____, before me, _____, Notary Public, personally appeared _____, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____

(Seal)

City Of Ukiah

Ukiah Valley Sanitation District

Permit #

SEWER LATERAL WATER PRESSURE

TESTING REPORT

Property Address:

Assessor's Parcel Number:

Owner's Name and Address:

New Construction: ☐

Applicants Name and Address (if different Than Owner):

Inspection and testing Permit Number:

Testing Site: Building to Sewer Main ☐ Sidewalk to Sewer Main ☐

Building to Sidewalk ☐

Meet Current Building Standards Yes ☐ No ☐

Date Tested:

Test Result:

Inspected by:

CITY ACKNOWLEGMENT

Public Utility Director or Representative Date;

300 Seminary Ave Ukiah, CA. 95482

(707) 463-6755

(707) 463-6740 fax

CITY OF UKIAH
AND
UKIAH VALLEY SANITATION DISTRICT

REQUIREMENTS AND STANDARDS FOR CLOSED CIRCUIT TELEVISION SEWER LATERAL INSPECTIONS

PURPOSE AND SCOPE

This document provides information and sets forth standards for sewer lateral closed circuit television (CCTV) inspections and recording. The purpose and scope of this document is to encompass those facets of the CCTV Sewer Lateral Inspection Program pertaining to the performance and quality of the CCTV inspection and recording and to improve the accuracy and quality of the televising activities and preparation of the CCTV inspection report. Specifically, it is for use by CCTV operators and technicians, contractors, plumbers, design engineers, CCTV interpreters, and others who are or may be involved in the CCTV Sewer Lateral Testing Program. This document does not set forth the standards pertaining to sewer lateral testing, repair, or replacement.

GENERAL INFORMATION

1. Prior to performing the CCTV inspection, the sewer lateral shall have been cleaned by utilizing the appropriate cleaning method given the inside condition of the sewer lateral. Roots, grease, oil, sediment, or solids shall be removed to permit the visual review and recording of the inside wall of the sewer lateral. The cleaning work is to be performed by a licensed Contractor pursuant to the provisions of Section 7026 of the State of California Business and professions Code.

2. CCTV sewer lateral inspection recordings shall be in VHS tape or DVD format and shall be in either color or black and white. Color recordings are preferred and after December 31, 2008, all recordings shall be in color.

3. Camera, power source, lights, and other components for the video inspection shall be equipment designed and manufactured for the inspection of sewer laterals and piping having a minimum diameter of 3” and for a distance of at least 100 feet from the point of access.

4. Lighting and camera quality shall be suitable to provide a clear, in focus picture of the entire inside periphery of the sewer pipe for all conditions encountered during the work.

5. All recordings shall be in focus, properly illuminated with good contrast, adequate color and tint, if colored recording, without distortion or outside interference.

6. The camera lens must be kept clean and clear; any fogging due to oil, grease, or other water content or debris that obscures the lens shall be cleaned off before proceeding with the recording operation. The camera is to be operative in 100% humidity.

7. Sewer lateral CCTV inspection recordings that are to be submitted to the City or District for review and the eventual issuance of a Sewer Lateral Certificate of Compliance are to be performed by contractors who are licensed and experienced to perform CCTV inspections or other inspection service providers and technicians who are permitted by law to perform such inspections. Contractors, inspection service providers, or technicians

who have been pre-qualified by the City may perform the CCTV inspection recording work without the City inspector being present when performing such inspection work within the City or District.

8. The CCTV inspection video tape or DVD shall show the whole periphery of the pipe. CCTV inspection personnel shall coordinate the work of the CCTV inspection with the property owner or resident to minimize or temporally stop sewer discharge into the sewer lateral while recording in order to show the whole periphery of the sewer lateral. If a bypass conduit is necessary, it must receive prior approval from the City inspector, and it shall be used as the last alternative.

9. A data view display feature capable of showing on tape or DVD the following information shall be provided:

    a. Physical address of property which the sewer lateral serves
    b. Date and time of inspection
    c. Name of company, firm or technician performing the CCTV inspection
    d. Inside diameter of sewer lateral and type of pipe material
    e. Continuous footage counter accurate within 3 percent
    f. Identification of access and starting point for video inspection such as upstream cleanout and location of cleanout. Vent lines will not be acceptable as access points.

10. The preferred direction of the video inspection is forward from upstream to downstream.

11. Video televising of the entire length of the sewer lateral is required. Inability or failure to do so because of obstructions in the line, collapsed pipe, out of alignment joint offsets, or lack of acceptable access points will result in the rejection of the CCTV inspection report. An acceptable access point is defined as a cleanout constructed in accordance with the plumbing code and or City of Ukiah Standard Plan No. 213 and it permits the complete video inspection of the sewer lateral. A vent pipe or any portion of the building plumbing is not considered as an acceptable access point. If there are no acceptable access points, installation of new sewer lateral cleanout meeting the requirements of the adopted plumbing code and the City of Ukiah Standard Plan No. 213 will be required in order to perform a video inspection of the sewer lateral. The location of the cleanout shall either be near the building footing at the building plumbing outlet, at the property line, or between the property line and the building footing. If only one cleanout is being provided to facilitate the video detection and it is located at the property line, a double sweep type cleanout shall be provided to facilitate inspection of the building lateral from the new cleanout.

12. The video tapes or DVDs shall be labeled and the labels shall be typewritten or legibly hand printed and shall include the following information:

    a. A “CCTV Sewer Lateral Inspection” title
    b. Street address of the property to which the sewer lateral serves
    c. Date of inspection
    d. The name of the Company, Firm or Individual responsible for the CCTV Inspection and to which payment has been made as reflected on the invoice provided by the inspection service provider to the owner or service requestor.

13. The CCTV inspector or operator shall attempt to identify all illicit connections to the sewer lateral observed in the CCTV inspection such as roof drains, area drains, french drains, swimming pool drains, basement drains, and footing drains by physically inspecting the property for visible evidence. The findings shall be noted in the CCTV Inspection Report

14. Sewer lateral lengths shall be measured from cleanout to sewer main, cleanout to inside of structure or from cleanout to cleanout.

SPECIFICATION

All CCTV data collecting and recording activities shall conform to the minimum requirements set forth in “The CCTV Inspection Standard for Sewer Laterals”.

THE CCTV INSPECTION STANDARDS FOR SEWER LATERALS

PART 1 – FIELD DATA COLLECTING PRACTICES

All CCTV inspection and recording practice for sewer laterals will be evaluated against these Standards.

1. All recordings shall be in color with the ability to achieve proper balance of tint and brightness or in black or white. After December 31, 2008, black and white recordings will no longer be acceptable. For recordings in color, the loss of color or severe redness due to equipment malfunction may be cause for rejection of the CCTV Inspection Report.
2. All recordings shall be properly focused and illuminated with good contrast, adequate color and tint, without distortion, or outside interference. While moving forward or in the reverse run, the picture shall be of adequate light to clearly ascertain the existence of pipe cracks or fractures and their severity in addition to the obvious features such as joints and additional connections to the lateral.
3. The complete periphery of the sewer lateral shall be visible.
4. The camera operation may be cable pulled or self propelling and may record moving forward or on a reverse pull depending on the pipeline conditions. The preferred direction is forward from upstream to downstream.
5. The camera lens shall be kept clean and clear without fogging due to oil, grease, or other water content or debris that obscures the lens. The lens shall be cleaned before proceeding with the recording operation.
6. The camera shall be moved through the sewer lateral at a uniform rate not exceeding 30 feet per minute. The camera shall be stopped for a minimum of 5 seconds at broken or cracked pipe sections, root intrusion, miss aligned joints, connections to the lateral or other pipe defects. The camera shall be stopped for a full minute at any flowing connections and if necessary, pulled back and re-televised to ensure a clear recording of the connection. Camera units shall have adjustable supports and shall be set so the camera axis is generally at the centerline of the pipe.
7. The operator shall clearly identify the location of all wye or tee connections, taps, breaks, roots, or other defects as outlined in Part 2 of these Standards.
8. The total length of the sewer lateral shall be inspected. If the entire length of the sewer lateral cannot be inspected because of obstructions, the CCTV Inspection shall be recorded as a failed inspection. However, the obstruction may be removed and the sewer lateral repaired in accordance with the “Standards for Obtaining a Sewer Lateral Certificate of Compliance Based on Repair or Replacement” and the line re-inspected.
9. The pipe diameter shall be obtained by physical measurement in the upstream (or downstream) cleanout. The pipe material shall be identified.
10. Reverse set ups are to be limited. Potential reverses shall be identified and reported to the City for review. It is intended that the number of reverses are minimized to those absolutely necessary to complete the inspection.

PART 2 – CCTV INSPECTION AND REPORTING FORM

The City and District CCTV Inspection and Reporting form is to be utilized in reporting and submitting any CCTV inspection recording to the City for review and the subsequent issuance of a Sewer Lateral Certificate of Compliance. The CCTV inspection report form can have any number of pages, depending on the number of defects found and it is to provide general information and inspection defects. General information including property address, date, time, operator name, and recording ID shall be provided. A diagram or a drawing showing the street, approximate location of the cleanout(s) and building face is to be provided. The diagram may be drawn on the back of the CCTV Inspection Report or prepared on a separate sheet of paper and attached to the inspection report. Pipe diameter, pipe material, shape of the pipe, pipe length, televised footage, counter number at start and end of inspection (if recorded on video tape), CCTV view direction, usage of reverse setups and comments shall be provided. A sample CCTV Inspection Report form and the sewer defect classification nomenclature table are attached to these standards.

PART 3 – CCTV RECORDING AND INSPECTION REPORT REVIEW

1. All CCTV recordings will be reviewed for acceptability of quality based on the minimum standards established and the CCTV Inspection Report will be checked against the visible features shown on the CCTV recording.
2. A CCTV Inspection Report shall be completed in conformance with the standards and appropriate sewer defect nomenclature which best represents the sewer lateral defects found shall be used.
3. Loss of vertical hold which has an impact on the ability to read and interpret the tape, shall constitute a cause of rejection of the recording.
4. In those cases where it is impossible to stop inflow into the sewer lateral during the CCTV inspection and recording because of illicit drainage connections or because the building to which the lateral serves is a facility which must continually use sewer service without interruption or is difficult to control the use of sewer service such as hospitals, care facilities, doctor and dental offices, or a large office, commercial, or industrial complexes, the CCTV inspection is to be performed during off peak usage of the sewer service. Heavy water flows which obscure the viewing of the inside of the sewer lateral will be cause for rejection of the recording. Surcharging and flooding of the camera lens will not be an excusable condition if it has been artificially created by an upstream surcharge. The existence of flow condition where the camera towing bridle is underwater and the sewer line segment is clearly not in a sag condition may result in a determination that the recording conditions are unacceptable.
5. All sewer lateral line segments must be televised complete from cleanout to cleanout, cleanout to sewer main, or from cleanout to structure entrance on the same recording tape or disk in a continuous run unless a reverse setup is necessary or if the recording time exceeds the capacity of the recording medium.
6. Continuous footage readings for identifying the location of defects must be accurate to within 3 percent tolerance. Defect identifications are to be called out and recorded to the nearest full foot. Any inaccuracy in the continuous footage meter or identified defects or features which cause doubt as to the accuracy of the locations or total length shall render the line segment recording as unacceptable. If the operator has acknowledged that the forward run is unacceptable and has decided to re-televise on the reverse pass, the operator must ensure that the footage markings are correct and that a stop at each feature for 5 seconds is provided to produce a complete recording inspection in the reverse pass.

7. Any other unidentified defect such as equipment interference or malfunction causing blurred or obscured images that detracts from the ability to completely and with reliable accuracy read the recording shall constitute a basis for rejection.

TYPICAL ADVERSE PIPE CONDITIONS TO BE REPORTED IN THE CCTV INSPECTION REPORT

Cracked Pipe (longitudinal, radial, spiral, multiple)

Broken Pipe, Hole in Pipe, Deformed Pipe, Collapsed Pipe

Separation in Pipe Joint (roots, earth movement, collapsed pipe section)

Pipe Obstruction (cause for failed inspection)

Infiltration (observable, evidence of, seeps into line, runs into line)

Debris or Sediment in the Pipe (flow undisturbed or disturbed, unable to continue)

Grease (flow undisturbed or disturbed, unable to continue)

Scaling (flow undisturbed or disturbed, unable to continue)

Side Connections (attempt to identify)

Cleanouts (existing or missing and location)

CITY OF UKIAH
AND
UKIAH VALLEY SANITATION DISTRICT

STANDARDS FOR OBTAINING A SEWER LATERAL CERTIFICATE OF COMPLIANCE BASED ON REPAIR OR REPLACEMENT OF THE PRIVATELY OWNED PORTION OF A SEWER LATERAL

PURPOSE

This document sets forth the minimum standards to which sewer laterals will be repaired, replaced, or re-lined for the purpose of obtaining a Sewer Lateral Certificate of Compliance in accordance with the requirements set forth in the Ukiah Valley Sanitation District Ordinance No 29 and the City of Ukiah Ordinance No. 1091 codified as Articles 1 and 18 of Division 4, Chapter 2 of the Ukiah Municipal Code.

GENERAL INFORMATION

The Ukiah Valley Sanitation District Ordinance No. 29 and the City of Ukiah Ordinance No. 1091 require the cleaning, inspection, and testing of sewer laterals connected to public sewers and serving residential, multi-family residential, commercial or industrial use properties upon the occurrence of stipulated property transfer transactions or events. In the Ukiah Valley Sanitation District, these transactions or events are, (1) the change of ownership of the property served other than exempted changes of ownership, (2) any repair or replacement of the main sewer to which the lateral is connected, or (3) a determination by the Ukiah Public Utilities Director that the cleaning and testing is required for the protection of public health, safety and welfare. In the City of Ukiah, the transactions or events requiring the cleaning, inspection and testing of a sewer lateral are (1) the application for a new connection to the sewer collection system, (2) the application for a building permit for a remodel of any structure being served by the sewer lateral where the cost of the remodel work exceeds $50,000 in 2007 dollars and adjusted every year for inflation, (3) the application for a building or plumbing permit to install additional toilet facilities on the property served, (4) the application for a change of use on property served from residential to commercial or from non-restaurant commercial to restaurant commercial, (5) the change of ownership of the property served other than exempted transfers, (6) any repair or replacement of the main sewer to which the sewer lateral is connected, or (7) a determination by the Public Utilities Director that the cleaning, inspection, and testing is required for the protection of the public health, safety, and welfare. Nothing in the Ordinances prevents such testing, repair or replacement before a change of ownership. The property owner is responsible for the repair or replacement of the privately owned sewer lateral which has been found through testing and inspection to exhibit conditions which would permit excessive infiltration to enter the sewer collection system or excessive exfiltration. The privately owned sewer is defined as that part of the sewer lateral that is required to be maintained by the property owner in accordance with ordinances adopted by the District and City. Upon completion of the repair or replacement of the sewer lateral, re-inspections are to be conducted until the sewer lateral passes the required testing. Excessive infiltration or exfiltration is defined as exceeding the allowable amount as specified herein. Once the sewer lateral has successfully passed the inspection and testing procedure, the Director of Public Utilities shall execute a Sewer Lateral Certificate of Compliance which shall be filed with the Director of Public Utilities and the Building Department having jurisdiction and recorded with the County Recorder of Mendocino County.

There are two categories of Sewer Lateral Certification of Compliance for the continued service of a lateral based upon materials and performance: (1) A 10 year certificate for existing laterals that do not conform to the current material standards for new laterals as established in the plumbing code adopted by the City of Ukiah and does not exfiltrate at a rate greater than that established in the

exfiltration pressure test for existing laterals (refer to the provisions specified in Specified Pressure Tests of these Standards). (2) A 25 year certificate for existing, existing repaired or existing replaced sewer laterals that meet the current material and testing standards for new laterals as established in the plumbing code adopted by the City of Ukiah. For a 25 year certificate, the sewer lateral must be watertight.

An alternative testing and inspection procedure for a 10 year certificate consisting only of a CCTV inspection of the sewer lateral is applicable when there is a qualified change of ownership of the property served and the potential for hydrostatic conditions around the sewer lateral do not exist. Currently, all property located within the City limits are within the zone designated as having the potential for hydrostatic pressures.

In the Ukiah Valley Sanitation District there are five (5) exemptions to the cleaning, inspection, and testing requirements set forth in the District's Ordinance other than certain transfers of interest in real property and they are (1) where sewer laterals are more than 500 feet from the streams or other surface waters which flow into the Russian River, (2) sewer laterals that have been inspected within the last twenty five (25) years where the lateral is made of PVC, metal, or other modern material meeting the Uniform Plumbing Code, (3) sewer laterals that have been inspected within the last ten (10) years where the lateral is not made of PVC, metal, or other modern material meeting the Uniform Plumbing Code, (4) Sewer laterals that were last installed or replaced within the last twenty five (25) years where the lateral is made of PVC, metal, or other modern material meeting the Uniform Plumbing Code, and (5) any building where the Director of Public Utilities determines that testing and or repairs have been made in accordance with the ordinance within the last five (5) years. Certificates of Compliance will be issued indicating that the sewer lateral is exempt from the inspection and testing provisions of the District Ordinance if the sewer lateral meets the exemptions stated above. However, the Certificate of Compliance for an exemption expires upon the occurrence of an event requiring the inspection or testing or upon the occurrence of another exempted event.

For those properties within the City of Ukiah and not within the District, a property owner may apply for a Sewer Lateral Certificate of Compliance without inspection when (1) the property owner provides evidence, satisfactory to the Director of Public Utilities, that the sewer lateral serving the property is ten (10) years old or less, (2) the property owner provides evidence, satisfactory to the Director of Public Utilities, that the sewer lateral was repaired or replaced and passed inspection within the previous ten (10) years, or (3) the property owner provides evidence, satisfactory to the Director of Public Utilities, that the sewer lateral has passed an inspection within the past five (5) years.

Certificates of Compliance will be issued indicating that the sewer lateral is exempt from the inspection and testing provisions of the District Ordinance if the sewer lateral meets the exemptions stated above. However, the Certificate of Compliance for an exemption expires upon the occurrence of an event requiring the inspection or testing or upon the occurrence of another exempted event.

STANDARDS FOR REPAIR OR REPLACEMENT OF PRIVATELY OWNED LATERALS

Approved Repair Methods and Materials

1. Materials used in the repair or replacement of existing sewer laterals which have failed to pass an inspection and/or test shall be made of pipe materials, fittings, couplings, and other joining materials which have been approved for use pursuant to the current edition of the Plumbing Code adopted by the City at the time of the inspection and/or testing, and as modified and specified in these Standards.
2. Sewer Laterals constructed of an approved pipe material which have cracked pipe sections where the pipe has retained its original shape and does not show excessive deflection and is not subjected to hydrostatic pressures either outside or inside the pipe may be repaired with an approved cured in place spot repair lining.

3. Sewer laterals which are subjected to hydrostatic water conditions either inside or outside the pipe and which have not passed a required pressure test, may be repaired with an approved cured in place pipe lining system installed within the entire length of the sewer lateral from the wye in the sewer main to the sewer lateral cleanout closest to the building footing or replaced in its entirety with approved pipe materials. At the conclusion of the repair, replacement, or re-lining the complete sewer lateral must pass specified pressure tests.
4. The replacement of damaged pipe sections with approved materials, fittings, and couplings is only acceptable where the sewer lateral is not subjected to hydrostatic pressures either inside or outside of the pipe unless the complete sewer lateral from the wye at the main to the cleanout closest to the structure being served can pass the required pressure test after the repairs are complete.
5. Whenever 50% or less of the sewer lateral is repaired, replaced, or re-lined (Minor or No Repair), cleanouts shall be provided to grade to facilitate the inspection and testing at either the junction of the building drain and the sewer lateral at a point approved by the permitting agency, typically within 2 feet of the structure being served by the lateral, or at or near the property line at a point and in a manner approved by the Director of Public Works if in the public way, or, at a point and in a manner approved by the permitting agency if not in the public way and on private property. For that portion of the sewer lateral being repaired, replaced, or re-lined, cleanouts shall also be provided to grade at intervals not to exceed 100 feet in run of a cleaning snake to reach the adjacent run of a cleaning snake, and for each aggregate horizontal change in direction exceeding 135 degrees in accordance with the City Standard Plan No. 213 and the City adopted Plumbing Code.
6. Whenever a sewer lateral is more than 50% replaced or re-lined (Major Repair of Replacement), cleanouts shall be provided to grade in accordance with the City Standard Plan No. 213 and the City adopted Plumbing Code which include all of the following locations: A) At the junction of the building drain and the sewer lateral at a point approved by the permitting agency, typically within 2 feet of the structure being served by the lateral. B) At intervals not to exceed 100 feet in run of a cleaning snake to reach the adjacent run of a cleaning snake, and for each aggregate horizontal change in direction exceeding 135. C) At or near the property line at a point and in a manner approved by the Director of Public Works if in the public way, or, at a point and in a manner approved by the permitting agency if not in the public way and on private property.
7. Approved trenchless technologies such as “pipe bursting” may be utilized to replace sewer laterals.
8. Spot repairs consisting of the placement of metal or other sheeting materials and concrete or mortar will not be accepted.
9. Re-mortaring of joints as a repair method is not acceptable without prior approval of the permitting agency.
10. Pipe and pipe couplings shall be joined and installed in accordance with the manufacturer’s recommendations. Pipe repairs shall be made in a manner which provides the least number of pipe joints.
11. Damaged wyes at the sewer main shall be replaced by the District.

Backfilling Methods in the Public Right of Way

Backfilling methods utilized in the public right of way shall conform to the Standards and Specifications adopted by the Agency having jurisdiction of the public right of way and in accordance with the provisions of the encroachment permit issued by the permitting agency.

Types of Pipe Damage that Must Be Repaired or Pipe Sections Replaced

1. Where the sewer lateral is not subjected to hydrostatic conditions and the exfiltration test is not required (allowed CCTV Inspection), the pipe repairs must be made for the following pipe conditions:

a. A separation or offset in the pipe joint including any fish mouth condition at the joint.
b. Holes or cracks in the pipe bell, barrel, or coupling.
c. For PVC pipe, a deflection in the pipe cross-section exceeding 1/4“.
d. Failed trench section causing excessive belly or sump condition in a pipe section causing retention of water of one inch or more.
e. Root penetration into the pipe.

2. Where the sewer lateral is subjected to hydrostatic conditions and the pipe repair option selected is pipe lining, repairs shall be made to the sewer lateral prior to the installation of the liner and the repair shall correct the following deficiencies:
    a. A separation or offset in the pipe joint including any fish mouth condition at the joint which the lining system cannot bridge based on the liner manufacturer’s recommendations.
    b. Holes in the pipe bell, barrel, or coupling that the lining system cannot bridge.
    c. For PVC pipe, a deflection in the pipe cross-section exceeding 1/4“.
    d. Failed trench section causing excessive belly or sump condition in a pipe section causing retention of water of one inch or more.
    e. Root penetration into the pipe.
    f. Other lateral defects which the manufacturer of the lining system recommends be corrected prior to the placement of the liner.

<u>Hydrostatic Pressure Conditions Defined</u>

1. Hydrostatic pressures exist around the sewer lateral when the lateral is completely or partially submerged by groundwater or exists within the lateral when discharges to the lateral exceeds the capacity of the pipe or is subject to water head.
2. The following circumstances shall be prima facia evidence that the sewer lateral is subject to hydrostatic pressures:
    a. The property being served by the public sewer collection system is located East of State Street and West of the Russian River; located in FEMA flood Zones A and B; located adjacent to any property, street, or private road where subsurface drains are installed; located west of State Street, south of Lovers Lane and north of Meadow Brook, Oak Court, and Spanish Canyon Drive; and if any portion of the property is located within 100 feet of the bank of a stream, creek or drainage ditch and any portion of the lateral is below the elevation of the nearest bank.
    b. For commercial or industrial uses, at any time the discharge to the sewer lateral exceeds the following flows for a 3 inch diameter sewer pipe at the indicated slopes or if there exists on the property a plumbing fixture that has the indicated capacity:
        1. 50 gpm w/ slope of ¼” per ft
        2. 35 gmp w/ slope of 1/8” per ft
    c. For commercial or industrial uses, at any time the discharge to the sewer lateral exceeds the following flows for a 4 inch diameter sewer pipe at the indicated slopes or if there exists on the property a plumbing fixture that has the indicated capacity:
        1. 100 gmp w/ slope of ¼” per ft
        2. 75 gpm w/ slope of 1/8” per ft
    d. For commercial or industrial uses, at any time the discharge to the sewer lateral exceeds the following flows for a 6 inch diameter sewer pipe at the indicated slopes or if there exists on the property a plumbing fixture that has the indicated capacity indicated:
        1. 310 gpm w/ slope of ¼” per ft
        2. 215 gpm w/ slope of 1/8” per ft
    e. Verification from a closed circuit television inspection that clear water is being discharged into the sewer main from the sewer lateral.
    f. Evidence that a basement sump pump is utilized on the property being served.
3. All pressure laterals shall be pressure tested at 1.5 times the operating pressure and no more than a 1% pressure loss shall be detected within a 10 minute test

Specified Pressure Tests

When Hydrostatic pressure conditions can exist outside or inside of the sewer lateral at any time, the sewer lateral shall be pressure tested by the exfiltration method by plugging the end of the sewer lateral at its point of connection to the public sewer and completely filling the sewer lateral with water from the lowest to the highest point thereof. To perform a pressure test, the sewer lateral must have a cleanout located near the building footing which is served by the sewer lateral or at the property line. If the cleanout does not exist, one must be installed by a qualified owner/builder or by a licensed contractor under a plumbing permit issued by the City Building Department if the property is located within the City Limits and outside the District or issued by the Public Utilities Department if the property is located within the District whether the property is located in the City or County" as part of the test procedure. The contractor or qualified owner may perform preliminary pressure tests prior to completing the backfill operations; however, the final pressure test shall be performed after the completion of the backfill operations. A video inspection of the downstream side of the test plug must be performed during the exfiltration pressure test to confirm that the test plug has sealed.

1. The exfiltration pressure test for a gravity sewer lateral shall be performed with potable or recycled water by filling the sewer lateral to a level 3" below the lowest floor drain or fixture connection to the building drain system up to a maximum water column of 33 feet above the test plug in the lateral at the face of the main or in the lateral wye fitting at the main when a wye fitting exists. If necessary, a stand pipe shall be fitted to the top of the cleanout to achieve the required testing water level. The testing water level shall also be at least higher than the elevation of the back edge of the public sidewalk at the point above the approximate location of the sewer lateral, or the top of curb if there is no public sidewalk or the edge of pavement if there is no curb or public sidewalk. An approved backwater valve and cleanout shall be installed at the property line if there is any gravity drained plumbing fixture in the structure being served that is below the elevation of the back edge of the public sidewalk at the point above the approximate location of the sewer lateral, or the top of curb if there is no public sidewalk or the edge of pavement if there is no curb or public sidewalk. A lateral may be tested in segments subject to the approval of the inspector. When segmental pipe testing is performed, each tested pipe segment must not exceed the allowed leakage rate.

2. The sewer lateral will have passed the pressure test if the testing water level within the testing standpipe does not drop more than the indicated rate for the given diameter of testing standpipe indicated below. The allowed leakage per sewer lateral is 212.5 gpd or 8.85 gph or .15 gpm or 34.08 cubic inches per minute.
    a. 3" Diameter: 5 inches per minute
    b. 4" Diameter: 2.5 inch per minute
    c. 6" Diameter: 1.5 inch per minute

END

RESOLUTION NO. 2007-02

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF UKIAH CALIFORNIA, ESTABLISHING A $50.00 FEE FOR PROCESSING SEWER LATERAL TESTING PERMITS, INSPECTING THE SEWER LATERAL TESTS, REVIEWING TEST RESULTS AND ISSUING SEWER LATERAL TESTING CERTIFICATES

WHEREAS, pursuant to City Code Section 3798.05C, fees for administering the Sewer Lateral Testing Ordinance must be adopted by the City Council by resolution; and

WHEREAS, the Public Utilities Department has determined the average staff time used for processing a sewer lateral testing permit, inspecting the sewer lateral test, reviewing test results and issuing a sewer lateral testing certificate is one (1) hour; and

WHEREAS, the requested fee of $50.00 recovers the cost for the services provided to administer the Ordinance.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF UKIAH, CALIFORNIA, DOES RESOLVE, DETERMINE AND ORDER AS FOLLOWS:

The fee for processing a sewer lateral testing permit, inspecting the sewer lateral test, reviewing test results and issuing a sewer lateral testing certificate is $50.

PASSED AND ADOPTED this 7th th day February, 2007, by the following roll call vote.

AYES: Councilmember Thomas, Crane, McCowen, Baldwin and Mayor Rodin

NOES: None

ABSENT: None

ABSTAIN: None

Mari Rodin, Mayor

ATTEST:

Linda Brown, Deputy City Clerk

RESOLUTION NO. 2007-21

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF UKIAH DIRECTING STAFF TO SUSPEND ENFORCEMENT OF SEWER LATERAL INSPECTION AND REPAIR ORDINANCE

WHEREAS,

1. The City of Ukiah ("City") has adopted Sections 3799.1-3799.7 of the Ukiah City Code, requiring the inspection and repair of sewer laterals upon a change in ownership of a property served by a sewer lateral, upon the issuance of a building permit to remodel structures on such a property, and upon other "triggering events"; and

2. These City Code sections were adopted, in part, to comply with sections III(6)(b) and III(6)(c) of the Consent Decree in *River Watch v. Ukiah et al.* (N.D. Cal.) Case No. CV-04518-CW ("*River Watch*"); and

3. Pursuant to a stipulation among the City, the Ukiah Valley Sanitation District ("District") and River Watch, on May 30, 2007, the federal district court in *River Watch* issued an order suspending the obligation of the City and the District to comply with sections III(6)(b) and III(6)(c) until November 1, 2007, to allow the City and the District time to analyze the feasibility of developing an alternative sewer lateral inspection and repair program;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF UKIAH, CALIFORNIA, DOES RESOLVE AS FOLLOWS:

1. Except for the inspection requirements contained therein, enforcement of Ukiah City Code Sections 3799.1-3799.7 is hereby suspended until November 1, 2007 ("the Suspension Period").

2. City staff is directed to notify realtors, title companies and other interested parties of the suspension and to post notice thereof on the City's website.

3. During the Suspension Period a triggering event will require the inspection but not the repair of the sewer lateral serving the lot or parcel subject to that event.

4. If the City and River Watch agree to an alternative sewer lateral inspection and repair program, the City Council may extend the Suspension Period to allow sufficient time to receive federal court approval for an amendment to the Consent Decree and to adopt appropriate amendments to the Ukiah City Code.

PASSED AND ADOPTED this 6th day of June, 2007, by the following roll call vote.

AYES:	Councilmembers Thomas, Crane, McCowen, and Mayor Rodin
NOES:	Councilmember Baldwin
ABSENT:	None
ABSTAIN:	None

Mari Rodin, Mayor

ATTEST:

Linda Brown, Deputy City Clerk

Element 6 - Overflow Emergency Response Plan

6.1 Self Assessment

Table 6.1
Overflow Emergency Response Plan – Self Assessment

	Yes	No	N/A
1. Do you have a written plan on how to handle reports of sewer system overflow?	X		
2. If a resident called the general agency phone number listed in the yellow pages at 3 a.m. on a Sunday morning to report "some water bubbling up in the street" would the proper information get to the correct person in order to respond quickly? Remember a citizen will probably call the City where they live and not the wastewater agency responsible for the sewers (if the City isn't responsible for the sewers).	X		
3. Do you have written Standard Operating Procedures in place to clean up SSOs?	X		
4. Who in your organization does your reporting to the State and Local agencies?	Water/Sewer Maintenance Supervisor		
5. Does that person have contact lists and check off sheets to track who was notified and when?	X		

This section of the Sanitary System Management Plan (SSMP provides a summary of the City's Overflow Emergency Response Plan (OERP). The complete plan is attached in Appendix 6-A. This section fulfills the OERP requirement of the State Water Resource Control Board (SWRCB, Element 6) SSMP requirements. Further, the OERP was approved by the City Council and District Board of Directors on April 15 and 16, 2009, respectively. Approval documents are appended to the OERP.

6.2 Regulatory Requirements for Overflow Emergency Response Plan

The summarized SWRCB requirements for the OERP element of the SSMP are as follows:

The City shall develop and implement an overflow emergency response plan that identifies measures to protect public health and the environment. The response plan should be developed as a stand-alone document and summarized in the SSMP. At a minimum, this plan must include the following:

a. Proper notification procedures so that the primary responders and regulatory agencies are informed of all SSOs [sanitary sewer overflows] in a timely manner;

b. A program to ensure appropriate response to all overflows;

c. Procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities (e.g., health agencies, regional water boards, water suppliers, etc.) of all SSOs that potentially affect public health or reach the

waters of the State in accordance with the Master Reclamation Permit (MRP). All SSOs shall be reported in accordance with the MRP, the California Water Code, other State law, and other applicable Regional Water Board WDR or National Pollution Discharge Elimination System (NPDES) permit requirements. The SSMP should identify the officials who will receive immediate notification;

d. Procedures to ensure that appropriate staff and contractor personnel are aware of and follow the Emergency Response Plan and are appropriately trained;

e. Procedures to address emergency operations, such as traffic and crowd control and other necessary response activities; and

f. A program to ensure that all reasonable steps are taken to contain untreated wastewater and prevent discharge of untreated wastewater to waters of the United States and minimize or correct any adverse impact on the environment resulting from the SSOs, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge.

6.3 Overflow Emergency Response Plan Discussion

The City of Ukiah initially prepared its "Spill Response and Notification Plan" in January 2002 and then updated it in June 2008. The City has retained the services of Winzler & Kelly to develop a Sewer System Management Plan (SSMP) to in part, manage and improve the condition of its wastewater collection system by implementing measures to reduce SSOs. The City's Spill Contingency Plan was reviewed and revised as part of this SSMP Element 6 to address current SSO reporting requirements. This new "Overflow Emergency Response Plan" (OERP) – submitted to the RWQCB on September 30, 2008 – provides an effective overflow response plan to minimize any health risks or damage to private property or the environment from SSOs. The complete OERP document is found in Appendix 6-A and includes the following sections:

I. Authority
II. General
III. Overflow Response Procedures
IV. Public Advisory Procedures
V. Regulatory Agency Notification Plan
VI. Media Notification Procedures
VII. Distribution and Maintenance of OERP

6.3.1 SSO Notification, Response and Impact Mitigation

Section III of the OERP explains sewer overflow response procedures from initial notification through field work and internal reporting and includes the following subsections:

A. ReceiptofInformationRegardinganSSO

This subsection describes the procedures and contact information for receiving an overflow report from outside parties or the City personnel. A sewer overflow can be reported to the City staff during the regular business hours at a main phone number which is published in local phone books and on the City website (www.cityofukiah.com). The City also has an automated answering system to receive any calls during non-working hours, weekends, and holidays. A complete list of the internal officials who will receive immediate SSO notification and their

contact information is represented in the OERP – Appendix B, "Sanitary Sewer Overflow Action Plan." The role of each person during an emergency has been established in a flow chart and is clear and concise.

B. DispatchofAppropriateCrewstoSiteofSewerOverflow

This subsection illustrates the protocols for immediately dispatching a crew to any site of a reported SSO for investigation and response. The City's OERP includes procedures for the notification of appropriate staff needed to respond to an SSO in the event extra crews are needed or if the SSO occurs outside normal City working hours. Guidelines for documenting any private or public property damages are explained and coordination with a hazardous material response team is also provided.

C. OverflowCorrection,Containment,andClean-Up

In this subsection, specific actions to be performed by the crews during an SSO are described. The City's policy is to be constantly on alert and ready to take all steps possible to prevent the SSO from reaching the storm drains, flood control channels, or waters of the State and/or United States, all in accordance with the City's discharge requirements.

Upon arrival at an SSO event, the City crew will initiate the following procedures:

Determine the cause of overflow;
Investigate the need for additional assistance or equipment;
Notify the dispatcher to call the Mendocino County Environmental Health Department if private property is impacted;
Take immediate actions to stop the overflow.

The SSO cleanup procedures for different situations, such as a trunk sewer stoppage, pump station failure, or wet weather overflow, are detailed in OERP Appendix B. Under most circumstances, the City can handle all response actions with its own maintenance forces and equipment; however, circumstances may arise where the City would utilize its list of pre-approved local vendors to acquire additional equipment. Local contractors would also be utilized for additional labor resources. A list of equipment vendors and contractors is provided in the OERP – Appendix B, Table 4.

This subsection also explains sampling laboratory tests requirements whenever overflow reaches surface waters.

D. OverflowReport

The City has a Sanitary Sewer Overflow Report form (OERP Appendix A) that must be completed for both internal and regulatory agency notification of SSOs. This subsection covers the information to be included in that form, such as date and location of overflow, start and stop time of the spill, estimate of the rate of SSO, indication whether the discharge reached water surfaces and cause of overflow. The Water/Sewer Maintenance Supervisor is responsible to complete the form and promptly forward it to Wastewater Treatment Plant Supervisor in order to notify the regulatory agencies when the overflow is eliminated.

E. CustomerSatisfaction

In this subsection, the City staff is required to follow up in person or by telephone with the parties reporting the overflow and fill out a survey questionnaire. The survey is an assessment for response procedures, SSO control and site clean up, public notification and regulatory agency reporting. The survey is provided in OERP Appendix D.

6.3.2 SSO Public Notification

Section IV of the OERP describes the actions the City of Ukiah takes to perform public advisory actions and limit public access to areas potentially affected by an SSO. The Water/Sewer Maintenance Supervisor is responsible to determine whether temporary signage is required and, if so, the Mendocino County Environmental Health Department will be notified.

Media notification procedures are explained in Section VI of the OERP. The Water/Sewer Maintenance Supervisor is responsible to notify the Public Information Officer (PIO). The PIO is the "first-line" of response to the media for any overflow.

6.3.3 SSO Regulatory Agency Reporting

Section V of the OERP establishes procedures that the City of Ukiah follows to provide formal notice to the regulatory agencies in the event of an SSO. The City is required to report all spills, regardless of size, to the North Coast Regional Water Quality Control Board (RWQCB), even if the spill is completely contained. Criteria for reporting an SSO to the Office of Emergency Services (OES), Mendocino County Environmental Health Department and California Department of Fish and Game are specified depending on the size of the SSO and whether or not the discharge affects surface water and/or results in fish kills. A complete list of the regulatory agencies and notification requirements is provided in OERP Appendix E.

The City is required to submit a certification to the RWQCB that OES and the Mendocino County Department of Environmental Health have been notified of any sewer discharge to a drainage channel or surface water. That certification is provided in OERP Appendix F.

6.3.4 Distribution and Maintenance of OERP

Section VII of the OERP provides guidelines for the distribution of the OERP, as well as an overview of the City procedures for ongoing review and updates to the OERP. Staff training is also discussed.

6.4 SSMP Program Audit – Overflow Emergency Response Plan

Element 10, SSMP Audits, serves to record the evolution of the SSMP elements. Per SWRCB requirements, the entire SSMP must be audited at least every two years, which is the current audit plan for the City. To assist in this auditing process, following is a summary of accomplishments and identified potential future program improvements relative to this element.

6.4.1 Accomplishments

Since the inception of the SSMP process, the City has taken affirmative steps to enhance its emergency response and reporting procedures for sanitary sewer overflows. Field crews and office staff have reviewed procedures noted in the OERP and are prepared to more efficiently respond to future SSOs and comply with reporting requirements set forth by State order.

6.4.2 Future Program Improvements

The following activities are current OERP audit goals:

The City will implement the procedures outlined in the OERP, including internal and external training of staff. The first training is scheduled for September 2009; additional training will be conducted as needed.

Further, the City will update the OERP per State and regional requirements for reporting SSOs. City staff will perform this activity on an ongoing basis.

Additional program elements that will be implemented by the City include the following:

The City will increase its use of GIS resources for both the sanitary sewer and storm drainage systems to identify potential SSO locations, strategize for future system improvements, and provide mapping resource for field crews;

The City and District will consider the inclusion of a detailed condition assessment of the collection system (See SSMP Element 4) for future fiscal year budgets. Enhanced characterization of the collection system will enable the City to target problem areas for repair and/or replacement projects that could reduce the potential for a SSO; and

The City and District will consider the inclusion of additional resources directed towards the FOG Program (See SSMP Element 7) for future fiscal year budgets. As with condition assessment, the goal of the FOG Program is to target problem areas in addition to physical characterization of FOG-generating facilities (i.e., Food Service Establishments). The approach also includes outreach to the public and education regarding the negative impact of SSOs on the environment.

SSMP APPENDIX E

Fats, Oils, and Grease Program Attachments

Grease Interceptor Permit Application
FOG Outreach Materials

City of Ukiah

Date:

Name
Address
City

To whom it may concern,

On October 1st, 2008 the Ukiah City Council amended the Ukiah city code pertaining to grease interceptors (fats, oils & grease). The purpose of this is to regulate the generation and disposal of grease interceptor waste for the protection of the City of Ukiah Sewage Treatment Plant and the environment. I have enclosed a Wastewater Discharge survey and a copy of the ordinance for your records. Inspection of your facility will take place in the next few months. If you have any questions please call (707) 463-6297.

Sincerely,

Lauren McPhaul
City of Ukiah
Water & Sewer Project Coordinator

Please remit survey to:
The City of Ukiah
Water/Sewer Department
411 West Clay Street
Ukiah. CA. 95482
or Fax to (707) 463-6740.

Public Works Department
300 Seminary Avenue
Ukiah, CA 95482
Web: www.cityofukiah.com

Phone: (707) 463 -6200
Fax: (707) 463-6204

FOG (FATS, OIL AND GREASE) PERMIT APPLICATION

Date:			Permit Number:
Property Address:			Business License Number:
Business Name:	Phone No:		E-mail Address:
Business Owner Mailing Address:	City:		State/Zip:
Phone No:	Fax No:		E-mail Address:
Facility Contact Name:	Facility Contact Phone No:		Fax No:
Hours of Operation:			
Grease Trap installed: _____, if yes, inside or outside?	Grease Interceptor Installed:_____, if yes, inside or outside?		
If outside, describe where:			
To the best of my knowledge, the information submitted herein is true and correct.			
Signature:			Date:

- This permit application form must be filled out completely. Incomplete applications will be returned. Please write N/A if the information being requested does not apply.
- **Permit fee of $100 dollars** is due at the time the permit application is submitted. An application received without payment will be returned.

Staff Use Only

City of Ukiah **U.V.S.D.**

Payment Received by:	**Date:**	

City of Ukiah
Pretreatment Program
300 Seminary Avenue
Ukiah, CA 95482
P: (707) 463-6755
F: (707) 467-2844

THE ENVIRONMENTAL COMPLIANCE INSPECTOR WILL RETURN TO COLLECT THIS COMPLETED SURVEY ON APRIL 30, 2014 OR YOU MAY FAX IT COMPLETED TO: 707-467-2844 BEFORE APRIL 30TH

Wastewater Discharge Survey
Food Service

****Please type or print and answer all questions or mark as not applicable.**

PART A – BUSINESS INDENTIFICATION

A1. Business name: _____

A2. Street address of premise discharging wastewater: _____
_____

A3. Contacts:
- a. Business owner: _____
  Mailing address: _____
  _____
  Phone number: _____
- b. Executive officer responsible for this facility (must be at least vice president, general partner, proprietor or authorized representative):
  Name: _____ Title: _____
  Mailing address: _____
  Phone number: _____
- c. Principal Contact person:
  Name: _____
  Mailing address: _____
  Phone number: _____
- d. On-site contact (if different):
  Name: _____

A4. Building owner:
  Name: _____
  Mailing address: _____
  Phone number: _____

PART B – GENERAL FACILITY DESCRIPTION

B1. Day/Hours of operation: _____
_____

B2. Number of employees: _____

B3. Principal business activity/products/services: _____

PART C – WATER USE AND DISCHARGE

C1. Water sources (circle all that apply):

a. Private well
b. Municipal water (specify municipality): _____
   Account #: _____
c. Other (specify): _____

C2. Water volume used in process:

a. Daily? _____ Weekly? _____ Monthly? _____
b. Metered or estimate? _____

C3. Number of connections to sewer: _____

C4. Do you have a grease trap/interceptor (please circle): YES NO

a. Size of grease trap:

_____

Size of interceptor:

_____

Where located on property:

_____

b. Maintenance provider:

Name: _____
Address: _____
_____
Phone #: _____

c. Maintenance frequency: _____

c. Who removes used grease/oil?

Name: _____
Address: _____
_____
Phone #: _____

Fats, oils, and greases aren't just bad for arteries and waistlines; they're bad for sewers, too.

Sewer overflows and backups can cause health hazards, damage home interiors and threaten the environment. A common cause of overflows is sewer pipes blocked by grease. Grease gets into the sewer from household drains as well as from poorly maintained grease traps in restaurants and other businesses.

Las grasas y los aceites no sólo son perjudiciales para las arterias y para la figura; también son dañinos para las alcantarillas.

Los derrames y desbordamientos de aguas residuales pueden ser peligrosos para la salud, dañar el interior de los hogares, y amenazar el medio ambiente. Una causa cada vez más común de derrames es las alcantarillas obstruidas por grasa. La grasa llega a las alcantarillas desde los desagües domésticos y trampas de grasa mal mantenidas en restaurantes y otros negocios.

Water Environment Federation®
Preserving & Enhancing the Global Water Environment

601 Wythe Street
Alexandria, Virginia
22314-1994 USA
Tel. 1-800-666-0206
Fax. 1-703-684-2492
www.wef.org

Printed on 100% recycled paper.

HS1100 8/2008

Fat-Free Sewers

Prevent Fats, Oils, and Greases from Damaging Your Home and the Environment

ALCANTARILLAS SIN GRASA

Evite que las grasas y los aceites dañen su hogar y el medio ambiente

Helping To Prevent Sewer Overflows and Backups Is Easy.

Where Does the Grease Come From?

Grease is a byproduct of cooking that comes from meat fats, lard, oil, shortening, butter, margarine, food scraps, baked goods, sauces and dairy products. When washed down the sink, grease sticks to the insides of sewer pipes (both on your property and in the street). Over time, it can build up and block an entire pipe.

Caution: Home garbage disposals do not keep grease out of the plumbing system. Moreover, hot water and products such as detergents that claim to dissolve grease only pass it down the line and cause problems elsewhere.

The results can be:

- Raw sewage overflowing in your home or the house next door.
- An expensive and unpleasant cleanup that often must be paid for by you, the home or business owner.
- Raw sewage overflowing into parks, yards, and streets.
- Potential contact with disease-causing organisms.
- An increase in operation and maintenance costs for local sewer departments, which leads to higher sewer bills for customers.

You Can Help!
Help prevent sewer overflows by:

- Never pouring grease down sink drains or into toilets.
- Scraping grease and food scraps into a can or the trash for disposal (or recycling where available).
- Putting baskets/ strainers in sink drains to catch food scraps and other solids, and emptying them into the trash.
- Speaking with your friends and neighbors about how to keep grease out of sewers.

Es fácil prevenir los derrames y desbordamientos de aguas residuales.

¿De dónde proviene la grasa?

La grasa, uno de los productos derivados de la preparación de comida, está presente en la carne, manteca animal, aceite vegetal, manteca vegetal, mantequilla, margarina, sobras de comida, productos para hornear, salsas, y productos lácteos. Cuando entra por el desagüe, la grasa se pega al interior de las tuberías de alcantarillado (tanto las de su propiedad como las de la calle); con el tiempo, puede acumularse al punto de bloquear la tubería por completo.

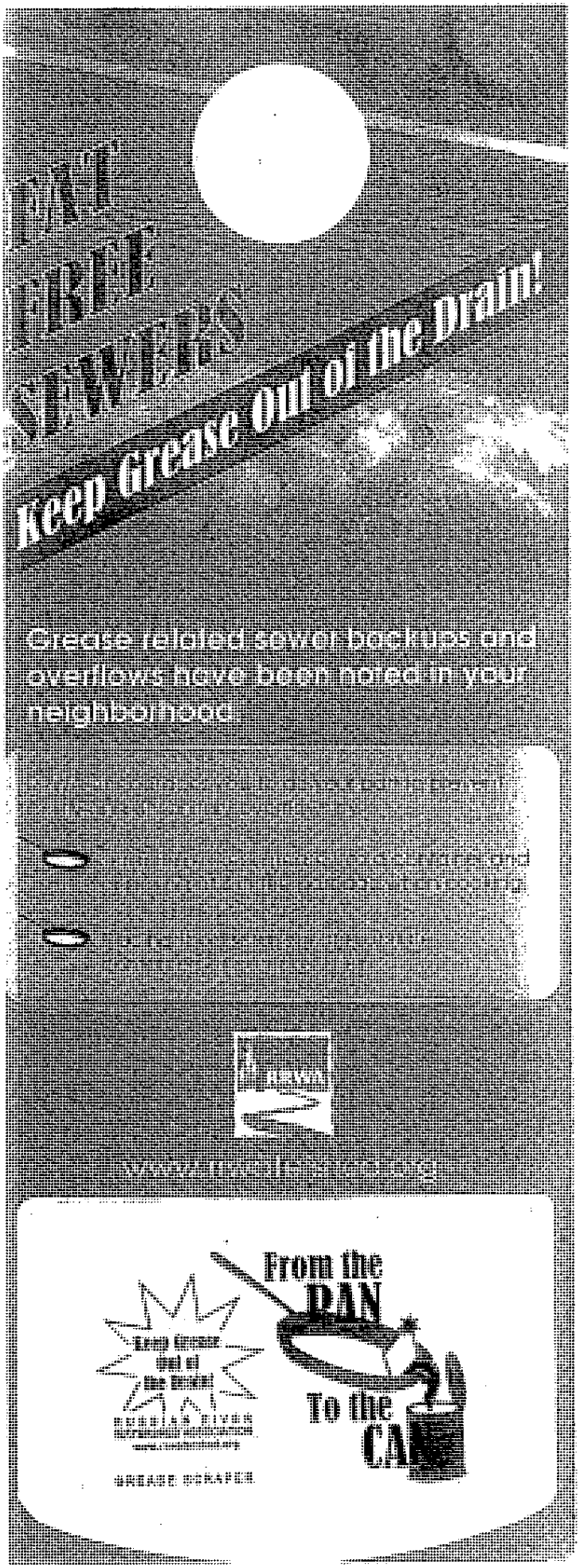
Advertencia: Los trituradores de basura domésticos no impiden la entrada de grasa al sistema de cañerías. Es más, el agua caliente y los productos como los detergentes que alegan ser capaces de disolver la grasa, pueden trasladarla por las cañerías y causar problemas en otras zonas.

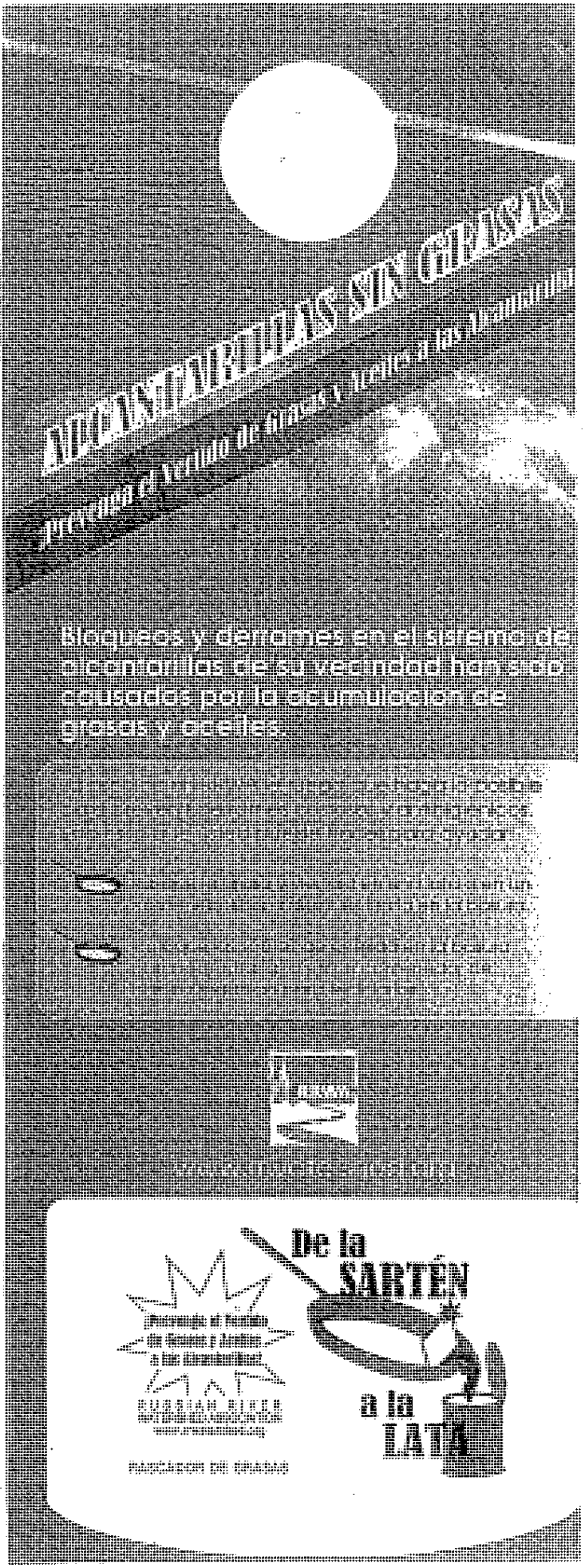
Esto puede traer las siguientes consecuencias:

- Desborde de aguas residuales en el interior de su hogar o el de su vecino.
- Necesidad de una limpieza costosa y desagradable que casi siempre es responsabilidad de usted, el propietario de la casa o negocio.
- Desborde de aguas residuales hacia parques, jardines, y calles.
- Posible contacto con organismos causantes de enfermedades.
- Crecientes costos de operación y mantenimiento para los organismos locales de alcantarillado y, en consecuencia, facturas más altas para los consumidores.

¡Usted puede ayudar!
Ayude a evitar derrames en las alcantarillas de las siguientes maneras:

- No vierta nunca grasa por el desagüe del fregadero ni en inodoros.
- Raspe la grasa y las sobras de comida y colóquelas en una lata o en la basura para desecharlas (o reciclarlas, si dispone de esta opción).
- Ponga filtros o coladores en los desagües de los fregaderos para atrapar las sobras de comida y otros sólidos, y deseche su contenido en la basura.
- Hable con sus amigos y vecinos sobre cómo impedir que la grasa entre en las alcantarillas.


Keep grease out of the drain!
Grease related sewer backups and overflows have been noted in your neighborhood.
From the PAN
To the CAN


¡Mantenga las grasas fuera del desagüe!
Bloqueos y derrames en el sistema de alcantarillas de su vecindario han sido causados por la acumulación de grasas y aceites.
De la SARTÉN
a la LATA

Residential Fats, Oils, and Grease Source Control Program: Regional Coordination to Raise Awareness on Grease Issues News Release, Russian River Watershed Association – 7/19/06

(Russian River watershed, CA) – Local agencies and special districts have come together to develop and implement a multi-year Residential Fats, Oils, and Grease (FOG) Source Control Program to increase public awareness of specifically residential FOG-related issues, and reduce the number of FOG-related sanitary sewer overflows.

Grease is a byproduct of cooking and is often washed into the sewer through the kitchen sink. Grease is problematic for sewers because it sticks to the insides of the pipes and builds up over time causing blockages and eventually overflows which can damage your home and the environment. These types of grease-related sewer spills are preventable through simple measures in the home which is the target of the Residential FOG Program. Through this program, the Russian River Watershed Association is working to alert local residents to grease-related issues, "Fat-Free Sewers - Keep Grease Out of the Drain!"

The RRWA Residential FOG Source Control Program consists of raising awareness through outreach materials including flyers, stickers, door-hangers, and grease scrapers. These materials will be distributed in residential areas (where FOG issues have caused sanitary sewer overflows), local markets including the Pacific Market and Oliver's Market, and local libraries and education centers. Don't be surprised to see door-hangers and grease scrapers labeled with the 1950's retro-style regional graphic displaying the message "From the Pan to the Can" appearing in your neighborhood soon.

"This is a very important program for our community. Keeping grease out of the drain benefits the homeowner, maintenance crews, and the environment by reducing sanitary sewer overflows. We are very supportive of the public education efforts of the fats, oils, and grease residential campaign. "
- Richard Burtt, Windsor Public Works Director

As part of the Residential FOG Program, a holiday campaign will begin this fall to target the holiday cooking rush, when people start to make heavy use of their kitchens. A student video contest will also be held this winter in

which students produce public service videos focusing on grease-related issues. The winning videos will be used for public service announcements and other outreach opportunities.

"The City of Santa Rosa is enthusiastically supporting RRWA with its program; we have had a similar localized FOG program in place for several years, and have seen very positive results from our program including reductions in sewage backups and overflows." *–Miles Ferris, Santa Rosa Director of Utilities*

If you would like to learn more about the residential FOG program or other RRWA programs - please contact us at 707.833.2553, or visit www.rrwatershed.org.

The Russian River Watershed Association (RRWA) is an association of eleven cities, counties, and special districts in the Russian River watershed that are working together to coordinate regional programs for clean water, fisheries restoration, and watershed enhancement.

How can you help protect your plumbing and our environment?

- Never pour grease down sinks, toilets, or any drains.
- Pour grease into a can for disposal in the trash. You can make your own grease can using any empty metal can (not plastic, which melts) and disposable, heat-resistant oven bags. Just toss the bags in the trash (after grease cools) and reuse the can. [Note: Please use caution when pouring hot grease or wait for it to cool slightly. Hot grease can burn skin.]
- Scrape grease and food scraps into a can or the trash for disposal.
- Use strainers in sinks to catch food scraps, and empty the strainers into the trash.
- Don't rely on a garbage disposal to get rid of grease—it grinds food into smaller pieces, but it doesn't keep grease from going down the drain.
- Wipe cookware and dishes before washing. Commercial additives in detergents only dissolve grease temporarily.
- Clean kitchen exhaust system filters routinely.
- Talk with your friends and neighbors about the grease problem, so that the community is aware of the risk.
- Call KUB at 524-2911 if you have any questions about grease. You may also e-mail wastewater@kub.org if you have questions about sewer system operations and maintenance.

Safety Tip

If you have a grease-related sewer backup, avoid contact or wash with soap and water. The Centers for Disease Control and Prevention (CDC) says skin contact isn't a serious health risk, but swallowing bacteria or a virus may cause illness. So always wash your hands before preparing or eating food, after using the bathroom (or helping another as a caregiver), and after touching objects exposed to a backup. For more information, see www.bt.cdc.gov/disasters/floods/sanitation.asp.

KUB
P.O. Box 59017
Knoxville, TN 37950-9017
865-524-2911
www.kub.org
wastewater@kub.org

CGY5M12

CAN THE GREASE

Protect your plumbing – and the environment.

Don't pour cooking grease down drains.

Cooking grease is the No. 1 cause of sewer backups in homes.

Why is cooking grease a problem?

If you pour cooking grease down your drains, it may build up, block your pipes, and cause rancid odors or messy, costly sewage backups in your home.

It can also clog KUB's sewer lines. In fact, grease is the leading cause of dry weather sewer overflows, which are a potential threat to our environment.

And don't believe the old wives' tale about running hot water after pouring grease down the drain: It doesn't work. The grease eventually cools, then congeals and coats pipes. When enough grease builds up, it can block your plumbing or KUB's sewer lines.

Where is grease produced?

Restaurants, condominiums, apartment buildings, homes, schools, churches, food-processing plants, shopping malls, hospitals, hotels, and many more locations all produce grease.

Grease is a by-product of cooking and is found in things like these:

- Meat fats
- Lard
- Cooking oil
- Shortening
- Butter and margarine
- Food scraps
- Baking goods
- Sauces
- Dairy products

What problems are caused by grease?

- Clogged drains or toilets.
- Sewage backups into your home.
- Sewer overflows in neighborhood parks, yards, and streets.
- Rancid odors.
- Expensive cleanup, repair, and replacement of damaged property.
- Potential contact with bacteria and viruses that can cause illness.
- Higher operating and maintenance costs, potentially resulting in higher sewer bills for you.

Never pour grease down sink drains or other drains. Scrape grease and food scraps from all cookware and dishes into a can or the trash for disposal.

How can you help Can the Grease?

KUB is giving out Can the Grease cans to raise awareness about disposing of grease in a way that's good for your plumbing, KUB's sewer system, and our environment.

But you don't need an "official" can to get started. A metal coffee can with a plastic lid or empty metal soup or vegetable cans make great grease cans. Line your can with disposable heat-resistant oven bags. Throw the liners away (after grease cools) and reuse the can.

The easiest way to prevent grease-related sewage overflows is to keep cooking grease out of the sewer system.

DO

DON'T

About the Sewage Overflow Issue

Q: What is a sewage overflow?

A: During nearly every rainfall or snow melt, excess water gets into the municipal sewer systems, which results in untreated sewage overflowing into area streams and rivers. These overflows violate the Environmental Protection Agency's federal Clean Water Act.

Q: What is the Clean Water Act and how does it affect our region?

A: The Clean Water Act was enacted in 1977 and prohibits any person or entity from discharging pollutants, such as sewage, from a point source into waterways unless a permit is obtained. Under this Act, communities in the ALCOSAN service area must eliminate all overflows from separate sanitary sewer systems and significantly reduce overflows from combined sewer systems.

Q: What is the difference between a separate sanitary sewer system and a combined sewer system?

A: A separate sanitary sewer system is designed to carry only wastewater to the treatment plant. Stormwater is carried in a separate system, and is not transported to the treatment plant.

In a combined sewer system, both wastewater and stormwater are carried in the same pipes. Of the 83 communities in the ALCOSAN service area, 26 have been identified as having primarily a combined sewer system within their municipal boundaries. The remaining 57 communities have separate sanitary sewage collection systems.

Q: How bad is the sewage overflow problem in the region?

A: Each year, these overflows affect Pittsburgh's rivers at least 70 days during the boating season (May 15- October 1) making water unacceptable for recreational contact. In addition, the overflows affect Allegheny County's primary source of drinking water. (Nearly 90 percent of Allegheny County residents get their drinking water from Pittsburgh's rivers.) Municipalities in the ALCOSAN service area could face a potential $2 billion investment in order to correct the problem. However, the best way to trim this $2 billion investment cost is for municipalities to work together on a long-term solution. Local municipal officials must take a serious look at the cost of maintaining ownership of this aged and deteriorating infrastructure. One solution might be to transfer ownership and operation of a municipality's collection system to a larger entity.

Q: How does the Environmental Protection Agency (EPA) plan to enforce the Clean Water Act?

A: The EPA recently distributed a draft administrative consent orders to municipal officials in all 83 ALCOSAN communities outlining the activities, such as cleaning and televising the sewers that municipalities must accomplish over several years (2004-2010) to begin complying with the Clean Water Act. For communities with separate sanitary sewer systems, the Allegheny County Health Department (ACHD) will enforce compliance with the order and in combined sewer communities, the Department of Environmental Protection (DEP) will be the enforcement agent on behalf of the EPA.

-over-

Q: What is an administrative consent order?

A: This EPA administrative consent order is a legal document that is signed by both the community and an enforcement agency that binds the community to complete specific activities that will lead to the elimination or reduction of sewage overflows in their municipal collection system. If the community does not meet the requirements of the order, the enforcement agency will impose penalties and/or fines.

Q: What does the administrative consent order require?

A: The administrative consent order requires communities to address the sewage overflow issue through specific activities, such as mapping, cleaning and televising the sewer system and making critical repairs. Then communities must complete flow monitoring, which indicates how much wastewater (and in some cases, stormwater) the sewage system is carrying during both dry and wet weather. This information will help communities develop a long-term wet weather control plan, in cooperation with ALCOSAN to sustain rehabilitation efforts into the future.

Q: How will communities financially accomplish the tasks required?

A: Fixing the sewage overflow problem in the region's municipal collection system could cost up to $2 billion for ALCOSAN communities. However, through the 3 Rivers Wet Weather Basin Groups, municipalities are exploring ways to share resources and costs to fix the problem using fewer dollars. In addition, 3RWWDP receives some federal, state and local funding to help support the communities. Communities are encouraged to begin budgeting for activities over several years to help lessen the impact on their municipality's annual budget.

Q: What is my role as a homeowner?

A: It is important to become educated on the sewage overflow issue because every individual can play a role in helping to solve the problem. As a homeowner, you are responsible for the maintenance and repair of your house lateral, a pipe that connects your home to the public sewer system. A cracked or deteriorated lateral or one filled with tree roots can allow groundwater to seep into the system contributing to the problem. In addition, if your community has a separate sanitary sewer system, you may be required to fix any improper connections, such as downspouts, driveway drains or sump pumps connected directly to the sewer system. The stormwater collected from these devices must be drained to your property or directly connected to a separate stormwater system.

Q: Will sewage rates go up?

A: Yes, it is likely that nearly all communities in the ALCOSAN service area will raise their sewage rates at some point to help pay for the cost of correcting the sewage overflow problem. Historically, the region's sewage rates have been among the lowest in the country. In addition, communities working through the 3 Rivers Wet Weather Basin Groups will be able to minimize their sewage rate increases by participating in the Basin Groups' cooperative projects.

Q: What role will 3 Rivers Wet Weather play in helping communities comply with the orders?

A: 3 Rivers Wet Weather has taken a lead role in helping communities tackle this problem through a basin-wide approach. The organization helped to facilitate the communication between the municipalities and the regulatory agencies which led to a feasible consent order signed by 100% of the communities in early 2004. In addition, 3RWW has funded and coordinated a system-wide mapping project to locate and map more than 100,000 manholes and structures throughout the system. 3RWW also plans to coordinate the flow monitoring requirements of the order across the ALCOSAN service area to help build the foundation for regional approaches in the future.

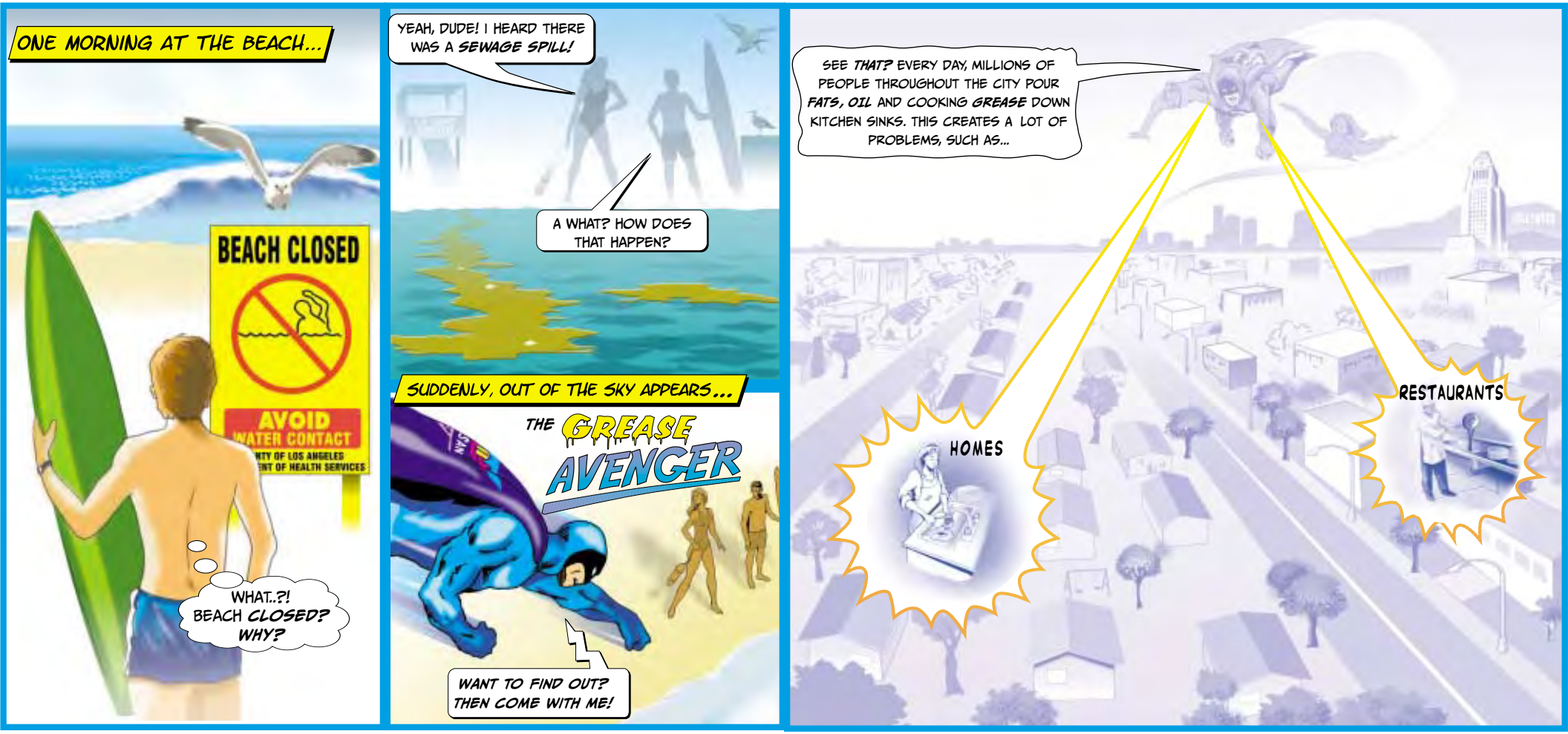
Q: Are other regions of the United States struggling with the same problems?

A: Yes, primarily older cities in the northeastern United States are struggling with the sewage overflow issue because they, too, have old and deteriorated sewer systems. However, Allegheny County is unique because it is the only location in the country in which 83 municipalities own and operate their own sewage collection system, and all of these systems feed into one sewage treatment facility (ALCOSAN).

3 Rivers Wet Weather Demonstration Program

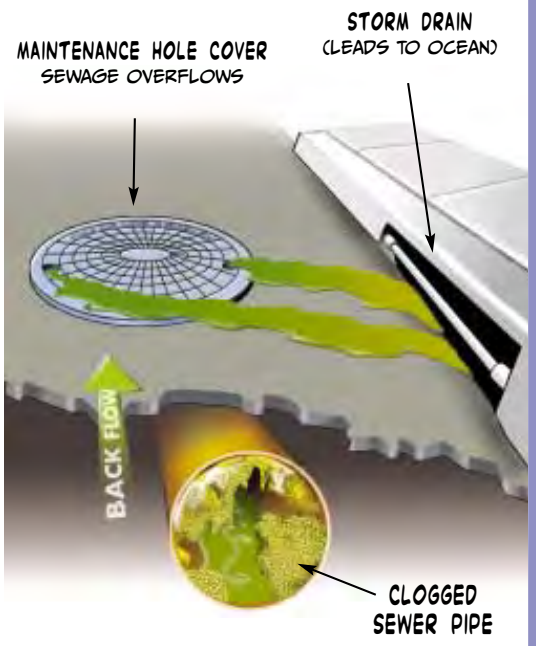
Improving our region's water quality

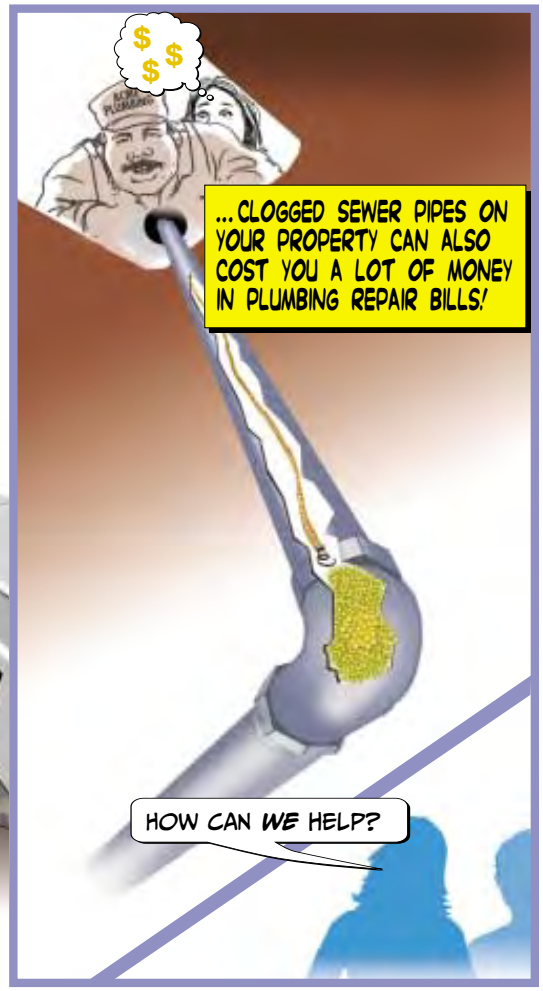
3901 Penn Avenue Pittsburgh, PA 15224 Ph: 412.578.8375 Fax: 412.578.8065
www.3riverswetweather.org


ONE MORNING AT THE BEACH...
BEACH CLOSED
AVOID
WATER CONTACT
WHAT..?! BEACH CLOSED? WHY?
YEAH, DUDE! I HEARD THERE WAS A SEWAGE SPILL!
A WHAT? HOW DOES THAT HAPPEN?
SUDDENLY, OUT OF THE SKY APPEARS...
THE GREASE AVENGER
WANT TO FIND OUT? THEN COME WITH ME!
SEE THAT? EVERY DAY, MILLIONS OF PEOPLE THROUGHOUT THE CITY POUR FATS, OIL AND COOKING GREASE DOWN KITCHEN SINKS. THIS CREATES A LOT OF PROBLEMS, SUCH AS...
HOMES
RESTAURANTS

GREASE CAN BUILD UP IN SEWERS, RESTRICTING THE FLOW OF THE WASTEWATER THAT COMES FROM OUR HOMES.

THIS BLOCKAGE FORCES THE WASTEWATER UP ONTO OUR STREETS—WHERE IT THEN ENTERS THE *STORM DRAIN SYSTEM.* AND...





REMEMBER...

- USE BASKETS OR STRAINERS IN SINK DRAINS TO CATCH FOOD SCRAPS AND OTHER SOLIDS...
- SCRAPE GREASE AND FOOD SCRAPS FROM PLATES, POTS AND PANS, UTENSILS AND GRILLS...
- FREEZE ANIMAL FATS IN A CAN AND PUT ALL FOOD WASTE AND DISCARDS IN A TRASH CONTAINER—*DON'T* POUR THEM DOWN THE SINK, GARBAGE DISPOSAL OR TOILET...
- GARBAGE DISPOSALS USE LARGE VOLUMES OF WATER AND ELECTRICITY—REDUCING OR ELIMINATING THEIR USE WILL LOWER YOUR SEWER, WATER AND POWER BILLS...
- BE CAUTIOUS OF CHEMICALS OR ADDITIVES THAT CLAIM TO DISSOLVE GREASE—THESE MAY NOT BE EFFECTIVE

KEEP FATS, OIL AND GREASE OUT OF THE SEWERS—AND HELP KEEP OUR ENVIRONMENT CLEAN!

REPORT PROBLEMS WITH THE CITY'S SEWER SYSTEM TO THE WASTEWATER COLLECTION SYSTEMS DIVISION:

(213) 485-7575

WEB SITE:
WWW.LACITY.ORG/SAN

PRODUCED BY:
CITY OF LOS ANGELES
DEPT. OF PUBLIC WORKS
BUREAU OF SANITATION

ARTWORK:
OSCAR AMARO

PRINTED ON ♻ RECYCLED PAPER

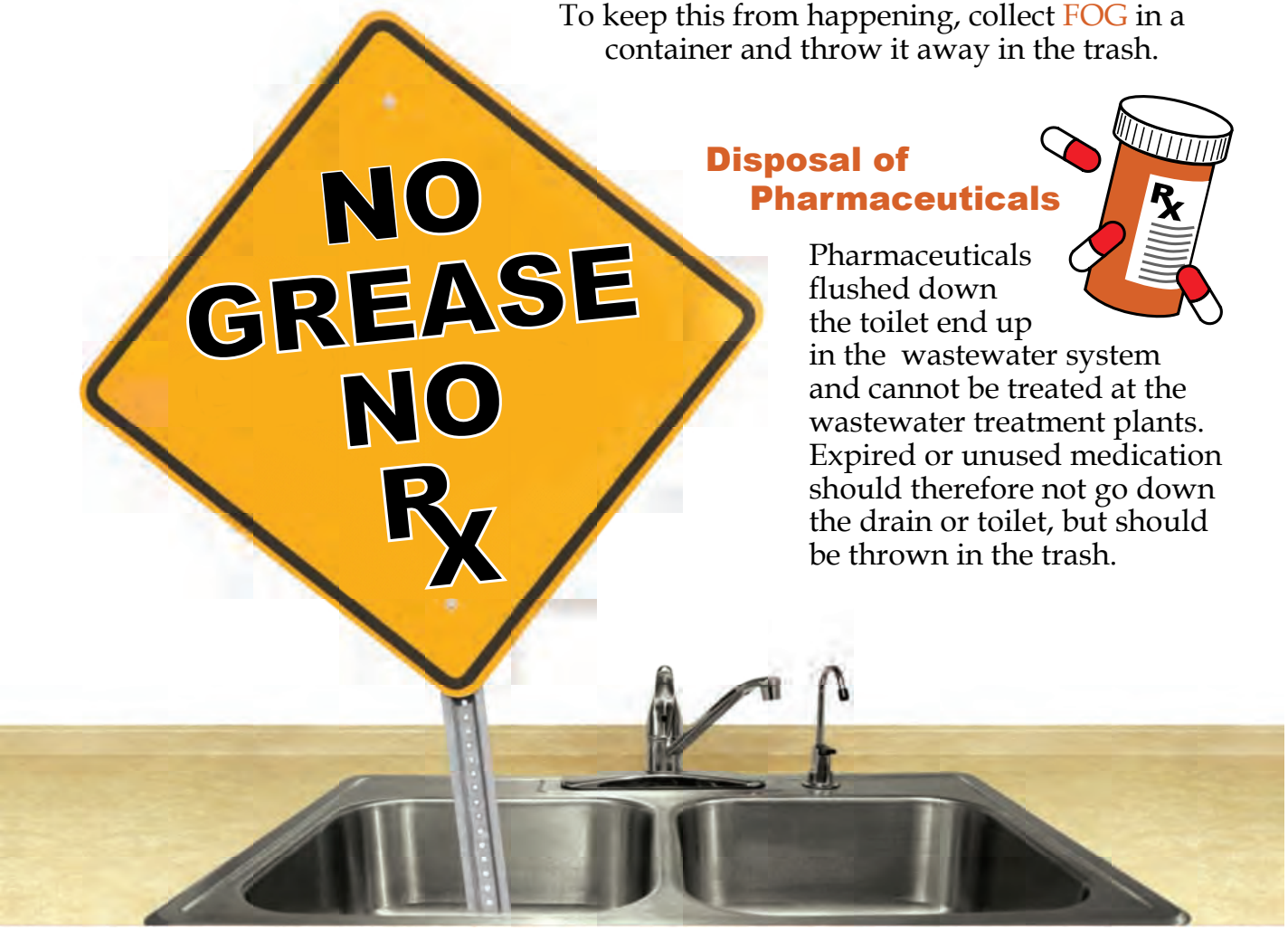
Disposal of Fats, Oils and Grease, and Pharmaceuticals

It doesn't stop at the kitchen sink....

Fats, Oils and Grease

Fats, Oils and Grease (FOG), the residue left over from cooking meats such as bacon that hardens after it cools, can cause problems when poured down the drain and clog pipes in your home. Did you know FOG can also clog the sewer pipes under the streets that take the wastewater from your house to the treatment plant? If that happens, the wastewater can back up and come to the surface and pollute the environment.

To keep this from happening, collect FOG in a container and throw it away in the trash.



Disposal of Pharmaceuticals

Pharmaceuticals flushed down the toilet end up in the wastewater system and cannot be treated at the wastewater treatment plants. Expired or unused medication should therefore not go down the drain or toilet, but should be thrown in the trash.

Mix the prescription drugs with an undesirable substance such as used kitty litter or coffee grounds. Then put the mix in empty cans or sealable bags and throw away in the trash. This further ensures that the drugs are not diverted or accidentally ingested by children or pets.

By correctly disposing of pharmaceuticals, you reduce the risk of improper drug use in your home while protecting the environment.

This message is brought to you by Dallas Water Utilities which reminds you to Cease the Grease! Visit http//www.ceasethegrease.info for more information.

CEASE THE GREASE

City of Dallas

City of Dallas Publication # 07/08-42

Desecho de manteca, aceites y grasa así como medicamentos

No desaparecen en el resumidero…

Manteca, Aceites y Grasa

Manteca, Aceites y Grasa (FOG por sus siglas en inglés), es el residuo que queda al cocinar carnes como el tocino. El residuo se endurece al enfriar causando problemas si es vertido por el resumidero ya que congestiona la tubería en su hogar. ¿Sabia usted que FOG también puede congestionar el sistema de drenaje que lleva las aguas residuales hasta la planta tratadora de aguas negras? Si esto ocurre, las aguas residuales pueden retornar y salir a la superficie contaminando el medio ambiente.

Para evitar que esto ocurra, coloque todo el FOG (Manteca, Aceites y Grasa) en un contenedor y tírelo a la basura

Desecho de Medicamentos

Medicamentos o fármacos que se tiran por el sanitario, acaban en el sistema de aguas residuales y no pueden ser neutralizados en las plantas tratadoras de aguas negras. Medicamentos que han caducado o medicamentos no usados no deben tirarse por el resumidero o por el sanitario sino que deben ser tirados a la basura. Mezcle los medicamentos con alguna sustancia indeseable tal como arena sanitaria para animales domésticos o residuos del café. Coloque la mezcla en latas vacías o bolsas selladas y tírela a la basura. Esto evita que las drogas vayan a ser accidentalmente consumidas por niños o animales domésticos.

Al desechar correctamente los medicamentos, usted reduce el riesgo de que estos sean consumidos indebidamente al mismo tiempo que protege el medio ambiente.

Este mensaje es traído a usted por Dallas Water Utilities quien le recuerda que "No tire la grasa!" Visite http//www.ceasethegrease.info para mas información.

City of Dallas

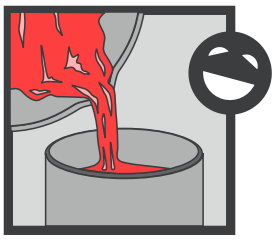
Let's Tackle the Grease in This Kitchen!

Why should I help?

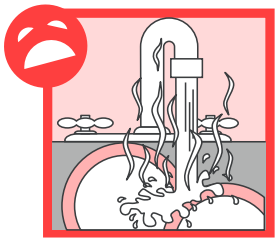
- Prevent grease buildups from blocking sewer lines.
- Stop sewer overflows into streets and storm drains.
- Reduce the number of times you have to clean your grease trap (food services)
- Save money spent on costly cleanups of sewage spills.
- Protect the quality of our water.

Do

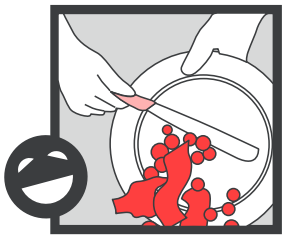
Don't



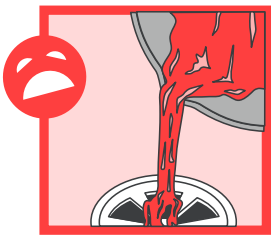
Put oil and grease in covered collection containers.



Don't run water over dishes, pans, fryers,and griddles to wash oil and grease down the drain. Don't rinse off oil and grease with hot water.



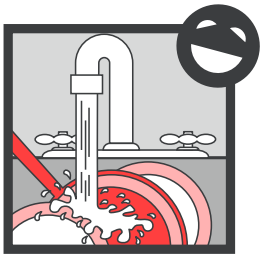
Scrape food scraps from dishes into trash cans and garbage bags and dispose of properly. Avoid using your garbage disposal.



Don't pour oil and grease down the drain.

Remove oil and grease from dishes, pans, fryers, and griddles. Cool first before you skim, scrape, or wipe off excess grease.

Don't put food scraps down the drain.



Prewash dishes and pans with cold water before putting them in the dishwasher.

Cover kitchen sink with catch basket and empty into garbage can as needed.

Cover floor drain with fine screen and empty into garbage can as needed.

More Ways to Tackle Grease

Use environmentally safe cleaning products instead of harsh detergents or cleaners that can damage sewer lines.

If you generate large amounts of used cooking oil, recycle it. To find a recycler, check the phone book under "recyclers" or "rendering companies."

If you generate small amounts of used cooking oil, pour it into a container you can throw away. Never pour it down the drain.

Start a compost pile at your home with scraps that are not meat. Find out about composting in the TCEQ publication, "A Green Guide to Yard Care" (GI-028)

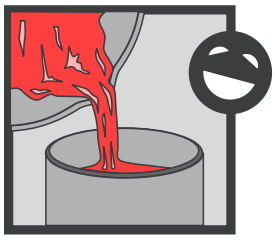
This flyer was made possible thanks to information taken from the Texas Commission on Environmental Quality's Flyer #GI-220

¡Combatamos la grasa en esta cocina!

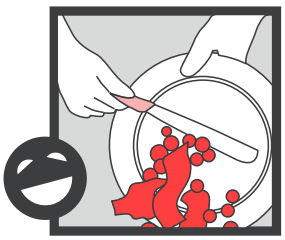
¿Por qué tengo que ayudar?

- Para evitar acumulaciones de grasa que obstruyan las tuberías de desagüe.
- Para impedir los desbordamientos del sistema de alcantarillado.
- Para ahorrar dinero que se gastaría en limpiezas costosas de derrames dealcantarillas.
- Para reducir la frecuencia con que se tienen que limpiar las trampas de grasa (servicio de alimentos).
- Para proteger la calidad de nuestra agua.

¡HACER!

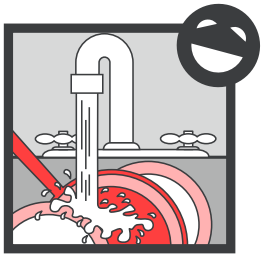


Poner el aceite y la grasa en recipientes cerrados para su recolección.

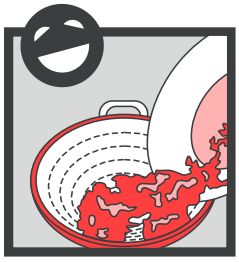


Quitar las sobras de comida de los trastes, tirarlas en bolsas de basura y desecharlas de la forma debida. Evitar usar el triturador de basura.

Quitar el aceite y la grasa de los platos, ollas, sartenes y parrillas. Primero enfriar antes de tallar o limpiar el exceso de grasa.



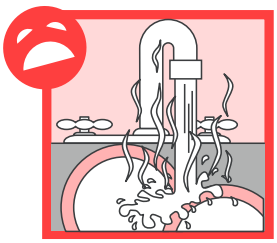
Enjuagar los platos y ollas con agua fría antes de ponerlos en el lavaplatos.



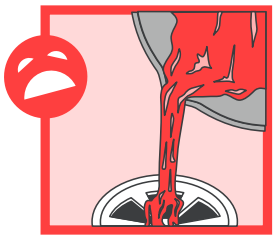
Colocar en el fregadero de la cocina una canasta para depositar los desechos y vaciarla en el bote de basura conforme sea necesario.

Cubrir el desagüe del piso con un cedazo fino y tirarlo en el bote de basura conforme sea necesario.

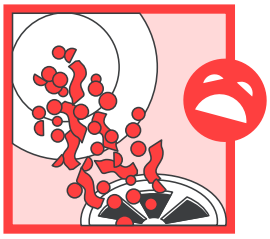
¡NO HACER!



No enjuagar platos, ollas, sartenes ni planchas con agua para verter el aceite y la grasa en el desagüe. No enjuagar el aceite ni la grasa con agua caliente.



No verter aceite ni grasa por el desagüe.



No tirar sobras de comida por el desagüe.

Más maneras de combatir la grasa

Use productos de limpieza seguros para el medio ambiente en lugar de detergentes o limpiadores abrasivos que puedan dañar las tuberías de desagüe.

Si genera grandes cantidades de aceite comestible usado, recíclelo. Si desea encontrar un centro de reciclaje, busque en el directorio telefónico bajo "reciclaje".

Si genera pequeñas cantidades de aceite comestible usado, luego viértalo en un recipiente que pueda tirar. No lo vierta nunca en el desagüe.

Empiece a hacer abono en su casa con sobras de alimentos que no contengan carne. Infórmese acerca de la técnica de abonar en la publicación de TCEQ: Una Guía Verde para el Cuidado del Jardín (GI-028).

Este folleto está basado en información tomado, del folleto GI-290 de la comisión de Calidad Ambiental de Texas.

file

Ukiah Daily Journal November 24, 2006

From the pan, to the can -- RRWA urges the public to keep grease out of the drain

Your Watershed

By Dave Richardson

Many families in the Russian River area will be settling down to a home cooked turkey dinner with all of the trimmings this holiday season. Because the holidays tend to create a cooking frenzy, the Russian River Watershed Association is reminding residents to properly dispose of fats, oils, grease and food scraps (...from the pan to the can...) to avoid costly and unsanitary clogged pipes.

Cooking grease poured down the sink drains can block sewer pipelines when it congeals and cause sewer backups and overflows -- into the environment, and into your home! This practice can be costly to homeowners and is certainly bad for the environment. These types of grease-related sewer spills are preventable through simple measures in the home.

To keep our pipes "Fat-Free," RRWA encourages you to:

- Never pour fats, oils, or cooking grease down the sink or garbage disposal.
- Pour excess grease into a container with a tight fitting lid and freeze for disposal with your household garbage; and wipe the remaining grease from the pan with a scraper or paper towel.
- Place food scraps in appropriate waste containers or compost piles rather than into the drain or garbage disposal.

For more information regarding the proper disposal of fats, oils and grease, call the Mendocino Solid Waste Management Authority at 468-9704 or go to http://www.mendorecycle.org

Large amounts of cooking oil from turkey fryers can also be filtered, frozen and reused for the preparation of another meal.

To place large amounts in the trash, kitty litter can be used to absorb the oil, which can then be placed in the garbage.

Used vegetable oil (preferably strained) can also be deposited at Yokayo Biofuels in Ukiah (150 Perry Street, 707-472-0900) for bio-diesel processing.

The Russian River Watershed Association is an association of eleven cities, counties, and special districts in the Russian River watershed that are working together to coordinate regional programs for clean water, fisheries restoration, and watershed enhancement.

THE UKIAH DAILY JOURNAL
November 17, 2007

From the pan, to the can -- keep grease out of the drain

Your Watershed

By Dave Richardson

It's that time of year again, when many families in the Russian River area will be settling down to a home cooked turkey dinner with all of the trimmings.

Given the cooking frenzy that the holidays tend to create, the Russian River Watershed Association would like to remind residents to properly dispose of fats, oils, grease and food scraps (...from the pan to the can...) when cooking to avoid costly and unsanitary clogged pipes.

Cooking grease disposed of down a kitchen sink drain can block sewer pipelines when it congeals and could cause sewer backups and overflows -- into the environment, and into your home! This practice can be costly to homeowners and is certainly bad for the environment. These types of grease-related sewer spills are preventable through simple measures in the home.

To keep pipes "Fat-Free", RRWA encourages the public to:

- Never pour fats, oils, or cooking grease down the sink or garbage disposal.
- Pour excess grease into a container with a tight fitting lid and freeze for disposal with household garbage; remember to wipe the remaining grease from the pan with a scraper or paper towel.
- Place food scraps in appropriate waste containers or compost piles, rather than into the drain or garbage disposal.

Large amounts of cooking oil from turkey fryers can also be filtered, frozen and reused for the preparation of another meal. To place large amounts in the trash, kitty litter can be used to absorb the oil, which can then be placed in the garbage.

Smaller quantities (less than 10 gallons) of clean, strained vegetable oil can be deposited at several local restaurants for biodiesel processing -- see the Sonoma County phone book recycling guide for locations, or call Yokayo Biofuels (150 Perry Street) in Ukiah at 472-0900.

For more information regarding the proper disposal of fats, oils and grease, call the Sonoma County Eco-Desk at 565-3375 or go to www.recyclenow.org [www.recyclenow.org]; or call the Mendocino Solid Waste Management Authority at 468-9704; http://www.mendorecycle.org/.

RRWA is an association of local public agencies in the Russian River Watershed that have come together to coordinate regional programs for clean water, fisheries restoration, and watershed enhancement.

From the pan, to the can - Keep grease out of the drain

Ukiah Daily Journal November 7, 2008

Your Watershed

By Dave Richardson

It's that time of year again, when many families in the Russian River area will be settling down to a home cooked turkey dinner with all of the trimmings. Given the cooking frenzy that the holidays tend to create, the Russian River Watershed Association would like to remind residents to properly dispose of fats, oils, grease and food scraps (...from the pan to the can...) when cooking to avoid costly and unsanitary clogged pipes.

Rinsing cooking grease into a kitchen sink drain can lead to blocked sewer pipelines as the grease congeals and could cause sewer backups and overflows – into the environment, and into your home! This practice can be costly to homeowners and is certainly bad for the environment. These types of grease-related sewer spills are preventable through simple measures in the home.

To keep our pipes "Fat-Free", RRWA encourages you to:

- Never rinse or pour fats, oils, or cooking grease down the sink or garbage disposal.
- Pour excess grease into a container with a tight fitting lid and freeze for disposal with your household garbage; remember to wipe the remaining grease from the pan with a scraper or paper towel.
- Place food scraps in appropriate waste containers or compost piles rather than into the drain or garbage disposal.

For more information regarding the proper disposal of fats, oils and grease, call the Sonoma County Eco-Desk at 565-3375 or go to www.recyclenow.org; or call the Mendocino Solid Waste Management Authority at 468-9704; www.mendorecycle.org.

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RRWA is an association of local public agencies in the Russian River Watershed that have come together to coordinate regional programs for clean water, fisheries restoration, and watershed enhancement.

Environmentally-friendly holiday season

Ukiah Daily Journal Nov. 13, 2013 p. 3

By Lisa Steinman

As the holiday season begins, so does the accompanying celebrating, and buying, and wrapping. Did you know that an extra million tons of waste is generated nationwide each week between Thanksgiving and New Year's? Fortunately, there is a lot you can do to reduce the amount of waste during and after the holiday season.

Headed out to the shopping mall or grocery store for some holiday shopping? Over the holidays, thousands of paper and plastic shopping bags end up in landfills. Instead of accepting a new bag at each store, take along reusable shopping bags to help reduce the number of single-use, disposable bags distributed by retailers. Tell store clerks you don't need a bag for small or oversized purchases. Reusable shopping bags are available for purchase at many grocery stores and other retail locations.

When buying gifts, check product labels to determine an item's recyclability and whether the product and the packaging are made from recycled materials. Send recycled-content greeting cards to reduce the amount of virgin paper used during the holidays. If you use traditional gift wrapping, avoid wrapping gifts in materials that are not recyclable or reusable, such as foil or metallic papers. Buy recycled-content wrapping paper - this purchasing choice encourages manufacturers to make more recycled content products available. Be sure to recycle packaging, wrapping paper, cards, holiday themed catalogs and advertisements, and anything else that is recyclable. Cancel catalogs you don't need. Food waste, household hazardous waste (such as batteries), and electronics should be properly disposed of as well.

Unless specifically noted in the following sections, please visit the resources at the end of the article for recycling and disposal options for the listed items as well as many others. Thanks to Sonoma and Mendocino Counties, there are many opportunities available to properly and easily dispose of your waste.

See RRWA, Page 9

RRWA

Continued from Page 3

Composting: You can compost your food scraps from your holiday dinners and parties. Fruits, vegetables, peels and seeds can be composted at home. In fact, about 35 percent of residential garbage is food waste, a resource that could be used instead of sent to the landfill. In Sonoma County, fruit and veggie food scraps can be put in the curbside yard debris cart for the municipal composting program (http://www.recyclenow.org/compost/curbside.asp).

Cooking oil: Recycle the cooking oil if you deep fry a turkey. There are locations in both Sonoma County and Mendocino County that accept clean strained cooking oil to be made into biodiesel.

Wrapping paper and ribbon: Paper makes up about 19 percent of what's going into our home-generated garbage. Holiday paper, cards, envelopes, and cardboard packaging can be recycled, along with other year round paper items, such as catalogs and magazines, in your single stream curbside recycling cart. Foil backed, metallic, and plastic wrapping paper cannot be recycled. Save ribbon to reuse on next year's packages.

Packaging: If you accumulate packing peanuts and bubble wrap over the holidays, many local packaging stores and mail centers are glad to accept these items for reuse.

Christmas trees: Christmas trees can be recycled into compost and mulch! Think twice before purchasing a "flocked" tree - sprayed-on artificial snow can be made from environmentally harmful components and hinder the ability to recycle a Christmas tree. Before recycling, your tree must be free of flocking, tinsel, decorations and its stand. For pickup and drop off options after the holidays, in Sonoma County visit http://www.recyclenow.org/recycling/tree.asp.

Electronics: There are many options for the proper disposal of both working and non-working electronics. Under a state mandate, electronics cannot be put in the garbage. An electronic device is anything with a circuit board. Look for devices with digital displays or programmable features. Examples include computers, TVs, laptops, printers, answering machines, CD and DVD players, stereos and cell phones.

Many of the stores where you buy your new electronics will take your old ones back from you and get them to a responsible recycler, even if the old item wasn't purchased there. When you're shopping for that TV or computer, ask the sales staff if they will take back your old electronics. If your item is working and can be reused, consider donation. Many local charities operate thrift stores and are always looking for donated items. Many of these organizations also accept both working and non-working electronics. In some areas, small electronic devices can be disposed of in the curbside recycling.

You can also recycle your old cell phones. State law requires that retailers selling cell phones take back used cell phones at time of purchase. For a complete list of services for your area, in Sonoma County visit http://www.recyclenow.org/toxics/electronics.asp.

Batteries: About 40 percent of all battery sales occur during the holiday season. Batteries should not be placed in the trash. Buy rechargeable batteries to accompany your electronic gifts, and consider giving a battery charger as well. Rechargeable batteries reduce the amount of potentially harmful materials thrown away, and can save money in the long run. By law, retailers selling rechargeable batteries are required to take back used rechargeable batteries from their customers. For a list of these retailers, visit the Call2Recycle website at http://www.call2recycle.org/.

Some stores offer take back for alkaline batteries, in addition to rechargeables. All kinds of household batteries can also be disposed of through Sonoma County's Household Toxics Program and the Mendocino County HazMobile Program.

Holiday Lights: Brighten your holidays while saving money with LED lights. LED's use 75 percent less energy than conventional holiday lights and last up to 25 times longer than incandescent lighting. They also offer convenient features like dimming and automatic shut-off.

Want to know more about recycling? For any questions about recycling and year round disposal options:

In Sonoma County, visit www.recyclenow.org , call the Sonoma County EcoDesk at 565DESK (3375), or look for your Sonoma County Recycling Guide printed in the Yellow Pages (formerly AT&T) under Recycling.

In Mendocino County, call the Recycling Hotline at 4689704, visit www.mendorecycle.org or see the Mendocino County Recycling Guide available through your waste hauler or from most cities.

This article was authored by Lisa Steinman, Waste Management Specialist for the Sonoma County Waste Management Agency, on behalf of RRWA.

www.rrwatershed.org

SSMP APPENDIX F

Spill Emergency Response Plan

AUGUST 2025

CITY OF UKIAH AND UKIAH VALLEY SANITATION DISTRICT

Sanitary Sewer Spill Emergency Response Plan

PREPARED BY:

LARRY WALKER ASSOCIATES
science | policy | solutions

PREPARED FOR:

City of Ukiah

UKIAH VALLEY SANITATION DISTRICT

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LIST OF ABBREVIATIONS

CCTV	Closed Circuit Television
CDFG	California Department of Fish and Game
City	City of Ukiah
CIWQS	California Integrated Water Quality System
County	Mendocino County Health Department
District	Ukiah Valley Sanitation District
EPA	Environmental Protection Agency
gpm	gallons per minute
mgd	million gallons per day
NPDES	National Pollutant Discharge Elimination System
OES	Office of Emergency Services
OSHA	Occupational Safety and Health Administration
SERP	Spill Emergency Response Plan
SSMP	Sewer System Management Plan
SSO	Sewer System Overflow or Spill
SWRCB	State Water Resources Control Board
WDRs	Waste Discharge Requirements

SPILL RESPONSE PLAN FLOWCHART

City of Ukiah – Spill Response Plan Flowchart	
Purpose	The purpose of this flowchart is to aid staff in prompt and responsible spill response and is intended only as a condensed version of Spill Emergency Response Plan (SERP).
Part 1 – Illicit Discharge Report	Upon receipt of a public complaint or notification of a confirmed or suspected SSO or spill, the City Hall operator receiving the call will refer the call to the Water/Sewer Services Attendant. • The Water/Sewer Services Attendant will obtain as much information as possible about the incident and record initial information in the Sanitary Sewer Overflow Report (SERP - Appendix A). • Upon documenting the incident information, the Water/Sewer Services Attendant will call the Water/Sewer Maintenance Supervisor and provide the details of the incident. • The Water/Sewer Maintenance Supervisor will review the incident information and dispatch the Spill Response Crew to the spill site. REFERENCES: 1. Sanitary Sewer Overflow Report (SERP - Appendix A) 2. Internal Official Contact Information (SERP - Appendix B)
Part 2 – Responding to SSO or spill	Visit the site immediately in an attempt to minimize or eliminate SSO or spill. • Upon arrival at the site, should a suspicious substance or odor not common to the sewer system be found, contact Water/Sewer Maintenance Supervisor and wait for Fire Department to take over the scene. • Verify the existence of spill and determine the immediate destination of the overflow (storm drain, street curb gutter, body of water, creek bed). • Identify and assess the affected area and extent/impact of the spill and request additional help if necessary. • Estimate flow data and take photographs. Document observations and complete Sanitary Sewer Overflow Report (SERP - Appendix A). • Post signs warning the public of sewage release in the affected area. • Using the appropriate equipment, contain the spill and clean up the area as illustrated in the Investigate Chart to Determine SSO Causes, Corrective Actions and Preventive Measures (SERP - Appendix B). • If the spill reaches surface water, sampling shall be conducted in accordance with Section 3 of the SERP.

City of Ukiah – Spill Response Plan Flowchart	
	REFERENCES: 1. Sanitary Sewer Overflow Report (SERP - Appendix A) 2. Spill Response Emergency Equipment (SERP - Appendix B) 3. Contractor Equipment Rental List (SERP - Appendix B) 4. Sample Requirements (SERP - Appendix B) 5. SSO Volume and Flow Rate Resources (SERP - Appendix C) 6. Sample Warning Signs (SERP - Appendix F)
Part 3 – Spill Notification	REFERENCES: 1. SSO Regulatory Agencies Notification Requirements (SERP - Appendix E) 2. Certification Form of 2-hr Notification (SERP - Appendix E)
Part 4 – Private Property Impacts/Damages	In case involving private property accidents including bodily injury of a private citizen, sewer back-ups, or substantial private property damage, one of the investigators/adjustors at Acclamation Insurance Management Services (AIMS) should be called immediately at (707) 546-1100. P.O. Box 1381, 1741 Fourth St., Santa Rosa, CA 95402 Refer to SERP - Appendix B – Table 1 for additional contact information during non-regular working hours.

Spill Categories	
Category 1	A category 1 spill is a spill of any volume of sewage from or caused by a sanitary sewer system regulated under the 2022 SSS WDR that results in a discharge to: • A surface water, including a surface water body that contains no flow or volume of water; or • A drainage conveyance system that discharges to surface waters when the sewage is not fully captured and returned to the sanitary sewer system or disposed of properly. Any spill volume not recovered from a drainage conveyance system is considered a discharge to surface water, unless the drainage conveyance system discharges to a dedicated stormwater infiltration basin or facility. A spill from a City/District-owned and/or operated lateral that discharges to a surface water is a Category 1 spill; the City/District shall report all Category 1 spills per section 3.1 of Attachment E1 (Notification, Monitoring, Reporting and Recordkeeping Requirements) of the 2022 SSS WDR.
Category 2	A Category 2 spill is a spill of 1,000 gallons or greater, from or caused by a sanitary sewer system regulated under the 2022 SSS WDR that does not discharge to a surface water. A spill of 1,000 gallons or greater that spills out of a lateral and is caused by a failure or blockage in the sanitary sewer system, is a Category 2 spill.
Category 3	A Category 3 spill is a spill of equal to or greater than 50 gallons and less than 1,000 gallons, from or caused by a sanitary sewer system regulated under the 2022 SSS WDR that does not discharge to a surface water. A spill of equal to or greater than 50 gallons and less than 1,000 gallons, that spills out of a lateral and is caused by a failure or blockage in the sanitary sewer system is a Category 3 spill.
Category 4	A Category 4 spill is a spill of less than 50 gallons, from or caused by a sanitary sewer system regulated under the 2022 SSS WDR that does not discharge to a surface water. A spill of less than 50 gallons that spills out of a lateral and is caused by a failure or blockage in the sanitary sewer system is a Category 4 spill.

REGULATORY AGENCIES REPORTING CHECKLIST

Refer to above categories and SERP – Appendix A	
Category 1 Spills of any volume that result in discharge to a surface water and/or drainage conveyance system	Report to the State Office of Emergency Services (Cal OES) at (800) 852-7550 within two (2) hours of becoming aware of the spill Make sure you ask for an "OES Control Number" Enter data into the online CIWQS Sanitary Sewer Database at http://ciwqs.waterboards.ca.gov/ within three (3) business days of becoming aware of the spill Certify report by Legally Responsible Official within fifteen (15) calendar days of Spill end date
Category 1 and Category 2 Spills	Within three (3) Business Days of Becoming Aware of spill: Submit Draft Spill Report to SWRCB using CIWQS website http://ciwqs.waterboards.ca.gov/ Within fifteen (15) Calendar Days of Spill End Date: Submit Certified Spill Report using the CIWQS website http://ciwqs.waterboards.ca.gov/ and obtain final spill event identification number
Category 1 Spills in which 50,000 gallons or greater were discharged into surface waters	Within forty-five (45) Calendar Days of Spill End Date: Submit Spill Technical Report using the CIWQS website http://ciwqs.waterboards.ca.gov/
Category 3 Spills	Within thirty (30) Calendar Days After the End of the Month in which the Spill(s) Occurred: Report and certify all spills to SWRCB using the CIWQS website http://ciwqs.waterboards.ca.gov/
Category 4 Spills	Within thirty (30) Calendar Days After the End of the Month in which the Spill(s) Occurred: Report and certify the estimated total spill volume exiting the sanitary sewer system using the CIWQS website http://ciwqs.waterboards.ca.gov/ Upload and certify a report with details from all Category 4 spills (including Lateral Spills) that occurred throughout the calendar year by February 1st of the following year.
No Spills in a Month	Within thirty (30) Calendar Days After the End of each Month: Submit a "No Spill" certification statement to SWRCB using the CIWQS website http://ciwqs.waterboards.ca.gov/

Refer to above categories and SERP – Appendix A	
Private Lateral SSOs (Reporting is Optional)	If reporting is desired, must be certified and reported to SWRCB as "Private Lateral" SSO with identifying responsible party, if known (not the City), using CIWQS website http://ciwqs.waterboards.ca.gov/ NOTE: A discharge from a lateral that is caused by a failure or blockage in the City-owned sanitary sewer system, is not considered a private lateral spill; it is a reportable Category 1-4 spill instead.
Annual Report (Previously known as Collection System Questionnaire)	Update the previous year's Annual Report by April 1 of each year for each calendar year (January 1 through December 31).
CIWQS Not Available	In the event that CIWQS is not available, the Water/Sewer Maintenance Supervisor will fax all required information to the RWQCB office and email the information to sanitarysewer@waterboards.ca.gov in accordance with the time schedules identified above. In such event, the City will submit the appropriate reports using CIWQS as soon as practical.

1 AUTHORITY

The City of Ukiah (City) owns and manages approximately 44 miles of sewer collection pipelines and one pump station within its corporate limits and manages another 46 miles of sewer collection pipelines and two pump stations owned by the Ukiah Valley Sanitation District (District). The District's collection system serves both unincorporated areas of Mendocino County and portions of the City which were annexed in the last 30 years.

This Spill Emergency Response Plan (SERP) is prepared to ensure that City of Ukiah personnel follow established guidelines for containing, cleaning-up, decontaminating and reporting sanitary sewer spills which may occur within the City of Ukiah and Ukiah Valley Sanitation District service area.

The City will follow reporting procedures with regard to sewer spills as set forth by the California State Water Resources Control Board (SWRCB), Monitoring and Reporting requirements stipulated under Order WQ 2022-0103-DWQ (2022 Waste Discharge Requirements for Sanitary Sewer Systems or 2022 SSS WDR) and the NPDES Permit/Waste Discharge Requirements Order No. R1-2024-0016.

2 GENERAL

The SERP is designed to ensure that every report of any spill (sewer or any other pollutant) is immediately dispatched to the appropriate City personnel. The purpose of this approach is so that the effects of the spill or overflow can be minimized with respect to impacts to public health and adverse effects on beneficial uses and water quality of surface waters and customer service. In the event of an emergency and/or when it is found that the spill is not a sanitary sewer overflow, the City will utilize its resources to mitigate problems and will coordinate with the responsible agencies. Refer to Section 3.2 – Part 6.

The SERP further includes provisions to ensure safety pursuant to the directions provided by the California Regional Water Quality Control Board (RWQCB), and that notification and reporting is made to the appropriate local, state and federal authorities when applicable. For purposes of this SERP, "confirmed sewage spill" is also sometimes referred to as "sanitary sewer overflow," "overflow," or "SSO."

The City initially prepared its "Overflow Response and Notification Plan" in January 2002 and then updated it in June 2008. The plan was subsequently updated in September 2008 to meet WDR requirements for the "Overflow Emergency Response Plan" (OERP), and again in December 2020. The SERP, previously known as the OERP, was last revised in August 2025 to meet the requirements stipulated under the 2022 SSS WDR.

2.1 OBJECTIVES

The primary objectives of the SERP are to protect public health and the environment, and to comply with regulatory requirements relating to confirmed sewage spills as set forth in the City's NPDES Permit/Waste Discharge Requirements (Order No. R1-2024-0016) and the 2022 SSS WDR.

Additional objectives of the SERP are as follows:

- Provide appropriate customer service;
- Protect treatment plant and collection system personnel;
- Protect the collection system, treatment facilities, and all appurtenances;
- Protect private and public property beyond the collection and treatment facilities;
- Provide clearly documented policies, procedures and guidelines for City staff to reference and follow in the event of a sanitary sewer overflow.

This plan shall not supersede existing emergency plans or standard operating procedures (SOPs) unless directed by City of Ukiah, Director of Public Works & City Engineer, and shall, in most cases, refer to these plans and will work in conjunction rather than conflict with them.

This section of the SSMP identifies City staff responsible for implementing the SSMP, responding to spill events, and meeting the spill reporting requirements. This section also includes the designation of the Authorized Representative to meet SWRCB requirements for completing and certifying spill reports.

2.2 ORGANIZATION OF PLAN

The key elements of the SERP are addressed individually as follows:

Section 3 - Spill Response Procedure

Section 4 - Public Advisory Procedure

Section 5 - Regulatory Agency Notification Procedure

Section 6- Media Notification Procedure

Section 7 - Distribution and Maintenance of SERP

A summary of the procedures required to be taken in the event of a spill is shown in the Sanitary Sewer Overflow Response and Notification Diagram in Appendix B.

2.3 SPILL TRACKING

The procedure to track the frequency and location of spills shall comply with current federal, state and local regulations. The City maintains records of documents required under the 2022 SSS WDR and records collected in accordance with the previous order (WQ 2006-0003-DWQ) for five (5) years as required in by the 2022 SSS WDR.

2.4 DEFINITIONS

Spill or sanitary sewer overflow (SSO) - Any overflow, spill, release, discharge or diversion of untreated or partially treated wastewater from a sanitary sewer system. SSOs include:

1) Overflows or releases of untreated or partially treated wastewater that reach waters of the United States;
2) Overflows or releases of untreated or partially treated wastewater that do not reach waters of the United States; and

3) Wastewater backups into buildings and on private property that are caused by blockages or flow conditions within the publicly owned portion of a sanitary sewer system.

Category 1 Spill: A spill of any volume of sewage from or caused by a sanitary sewer system regulated under the 2022 SSS WDR that results in a discharge to:

- A surface water, including a surface water body that contains no flow or volume of water; or
- A drainage conveyance system that discharges to surface waters when the sewage is not fully captured and returned to the sanitary sewer system or disposed of properly.

  Any spill volume not recovered from a drainage conveyance system is considered a discharge to surface water, unless the drainage conveyance system discharges to a dedicated stormwater infiltration basin or facility.

Category 2 Spill: A spill of 1,000 gallons or greater, from or caused by a sanitary sewer system regulated under the 2022 SSS WDR that does not discharge to a surface water.

A spill of 1,000 gallons or greater that spills out of a lateral and is caused by a failure or blockage in the sanitary sewer system, is a Category 2 spill.

Category 3 Spill: A Category 3 spill is a spill of equal to or greater than 50 gallons and less than 1,000 gallons, from or caused by a sanitary sewer system regulated under the 2022 SSS WDR that does not discharge to a surface water.

A spill of equal to or greater than 50 gallons and less than 1,000 gallons, that spills out of a lateral and is caused by a failure or blockage in the sanitary sewer system is a Category 3 spill.

Category 4 Spill: A Category 4 spill is a spill of less than 50 gallons, from or caused by a sanitary sewer system regulated under the 2022 SSS WDRs that does not discharge to a surface water.

A spill of less than 50 gallons that spills out of a lateral and is caused by a failure or blockage in the sanitary sewer system is a Category 4 spill.

Private Lateral Sewage Discharges: Sewage discharges that are caused by blockages or other problems within a privately-owned lateral.

Drainage Conveyance System: A drainage conveyance system is a publicly- or privately-owned separate storm sewer system, including but not limited to drainage canals, channels, pipelines, pump stations, detention basins, infiltration basins/facilities, or other facilities constructed to transport stormwater and non-stormwater flows.

Receiving Water: A receiving water is a water of the State that receives a discharge of waste.

3 SPILL RESPONSE PROCEDURE

The Spill Response Procedure provides a strategy for the City to mobilize labor, materials, tools and equipment to correct or repair any condition which may cause or contribute to an unpermitted discharge. The plan considers a wide range of potential system failures that could create an overflow to surface waters, land or buildings.

3.1 RECEIPT OF INFORMATION REGARDING A SPILL

Confirmed or suspected spills may be reported by City employees or by others (i.e., business owners, residents, plumbers, etc.) by calling the Ukiah City Hall at **(707) 463-6200**. The City Hall switchboard directs the call to the Water/Sewer Services Attendant at Unit 2932. The Water/Sewer Services Attendant is primarily responsible for receiving phone calls regarding possible sewer overflows during regular business hours (i.e., Monday through Friday from 8:00 am to 5:00 pm) and is responsible for notifying the Water/Sewer Maintenance Supervisor to respond to any given field situation. After hours, all calls go through the **24-hour emergency** phone line **(707) 463-6288** which notifies the on-call Water/Sewer Maintenance Crew, who will then contact the Water/Sewer Maintenance Supervisor to respond.

The Water/Sewer Maintenance Supervisor is then responsible as a primary responder to notify the regulatory agencies and prepare a report for the spill.

1. The Water/Sewer Services Attendant obtains all relevant information available regarding the overflow including:
    - Time and date call was received;
    - Specific location of spill;
    - Description of the problem causing the spill;
    - Time possible spill was noticed by the caller;
    - Caller's name and phone number;
    - Observations of the caller (e.g., odor, duration, back or front of property); and
    - Other relevant information that will enable the responding investigator and crews, if required, to quickly locate, assess and stop the spill.

The Water/Sewer Services Attendant records initial information in the Sanitary Sewer Overflow Report (Appendix A) and notifies the Water/Sewer Maintenance Supervisor.

2. Pump station failures are monitored and received by the operator on duty at the pump station. The operator on duty immediately conveys all information regarding alarms to the Water/Sewer Maintenance Supervisor to initiate the investigation.
3. Sewer overflows or spills detected by any personnel in the course of their normal duties are reported immediately to the Water/Sewer Maintenance Supervisor.
4. The Spill Response Crew must confirm the overflow. Until verified, the report of a possible spill will not be referred to as a "sewer overflow."

The Spill Response Crew completes the Sanitary Sewer Overflow Report (Appendix A) within 24 hours of the sewer spill confirmation. The Water/Sewer Maintenance Supervisor is responsible for reviewing, updating and signing the report. The complete report will be placed in the Spill Response Binder.

For spills of any volume that reach surface waters, the Water/Sewer Maintenance Supervisor shall report to the State Office of Emergency Services **within two (2) hours** of becoming aware of the discharge.

A complete list of the City officials who will receive immediate spill notification and their contact information is presented in Appendix B – Table 1.

3.2 DISPATCH OF APPROPRIATE CREWS TO SITE OF SPILL

Failure of any element within the wastewater collection system that threatens to cause or causes a spill triggers an immediate response to isolate and correct the problem. Crews and equipment are available to respond to any spill locations. Crews shall dispatch to any site of a reported spill immediately. Also, additional maintenance personnel shall be "on call" in the event extra crews are needed.

1. Dispatching Spill Response Crew
    - When the City receives notification of a potential sewer overflow or spill outlined in Section 3.1 of the Spill Response Procedure, the Spill Response Crew dispatches with appropriate resources as required.
    - Water/Sewer Maintenance Supervisor notifies the appropriate manager or supervisor by cell phone, pager or public works radio regarding the sewer overflow and field crew locations.
2. Crew Instructions and Work Orders
    - Spill Response Crew shall be dispatched by cell phone, pager or public works radio and receive instructions from their supervisors regarding appropriate crews, materials, supplies, and equipment needed.
    - Water/Sewer Maintenance Supervisor verifies that the entire message has been received and acknowledged by the crews who were dispatched. All standard communications procedures shall be followed. All employees being dispatched to the site of a spill shall proceed immediately to the site of the overflow. Any delays or conflicts in assignments shall be immediately reported to the supervisor for resolution.
    - In all cases the Spill Response Crew reports their findings, including possible damage to private and public property, to the Water/Sewer Maintenance Supervisor immediately upon making their investigation. If the Water/Sewer Maintenance Supervisor has not received findings from the field crew within one (1) hour, the Water/Sewer Maintenance Supervisor contacts the response crew to determine the status of the investigation.
3. Additional Resources
    - The Water/Sewer Maintenance Supervisor receives and conveys to appropriate parties requests for additional personnel, material, supplies, and equipment from crews working at the site of the sewer overflow.
4. Preliminary Assessment of Damage to Private and Public Property
    - The focus is to resolve the problem. The Spill Response Crew shall use discretion in assisting the property owner/occupant as reasonably as they can. They must be aware that the City could face increased liability for any further damage inflicted to

private property during such assistance unless authorized by the Water/Sewer Maintenance Supervisor. The Spill Response Crew shall take appropriate still photographs and video footage, if possible, of the outdoor area of the sewer overflow and impacted area in order to thoroughly document the nature and extent of impacts and shall forward available photographs to the Water/Sewer Maintenance Supervisor for filing with the Sanitary Sewer Overflow Report (Appendix A).

- In cases involving private property accidents including bodily injury of a private citizen, sewer back-ups, or substantial private property damage, one of the investigators/adjustors at Acclamation Insurance Management Services (AIMS), (707) 546-1100, P.O. Box 1381, 1741 Fourth St., Santa Rosa, CA 95402 should be called immediately. Refer to Appendix B – Table 1 for additional contact information during non-regular working hours.

5. Field Supervision and Inspection
    - The Water/Sewer Maintenance Supervisor visits the site of the spill, if possible, to ensure that provisions of this SERP and other directives are met.
    - The Water/Sewer Maintenance Supervisor is responsible for confirming that the Sanitary Sewer Overflow Report (Appendix A) is provided for reporting within the specified time.
6. Coordination with Hazardous Material Response
    - Upon arrival at the scene of a sewer overflow, should a suspicious substance (e.g., oil sheen, foamy residue) be found on the ground surface, or should a suspicious odor (e.g., gasoline) not common to the sewer system be detected, the Spill Response Crew shall immediately contact the Water/Sewer Maintenance Supervisor for guidance before taking further action.
    - Should the Water/Sewer Maintenance Supervisor determine the need to alert the hazardous material team, the response crew shall await the arrival of the Police, Fire Department or other responsible authorities to take over the scene.
    - Remember that any vehicle engine, portable pump or open flame (e.g., cigarette lighter) can provide the ignition for an explosion or fire, should flammable fluids or vapors be present. Keep a safe distance and observe caution until assistance arrives.
    - Only when that authority determines it is safe and appropriate for the Spill Response Crew to proceed, they can then proceed under the SERP with the containment, clean-up activities and correction.

3.3 SPILL CORRECTION, CONTAINMENT, MONITORING AND CLEAN-UP

Sewer spills of various volumes occur from time to time in spite of concerted prevention efforts. Spills may result from blocked sewers, pipe failures, or mechanical malfunctions among other natural or man-made causes. The City is constantly on alert and ready to respond upon notification and confirmation of a spill.

This section describes specific actions to be performed by the crews during a spill. A summary of the Sanitary Sewer Overflow Action Plan is included in Appendix B.

The objectives of these actions are:

- To protect public health, environment and property from sewage spills and restore surrounding area back to normal as soon as possible;
- To establish perimeters and control zones with appropriate traffic cones and barricades, vehicles or use of natural topography (e.g., hills, berms);
- To promptly notify the regulatory agency's communication center of preliminary overflow information and potential impacts;
- To contain the sewer overflow to the maximum extent possible including preventing the discharge of sewage into surface waters; and
- To minimize the City's exposure to any regulatory agency penalties and fines.

Under most circumstances, the City can handle all response actions with its own maintenance forces (Appendix B – Table 2 and Table 3). City personnel have the skills and experience to respond rapidly and in the most appropriate manner. An important issue with respect to an emergency response is to ensure that the temporary actions necessary to divert flows and repair the problem do not produce a problem elsewhere in the system. For example, when a large sewer main is blocked and the crews divert the flow to a smaller sewer pipe downstream of the blockage, they should observe the flows to ensure that the blockage does not recur downstream. The sewer conveyance system should be returned to the normal operation as soon as the blockage is removed.

Circumstances may arise when the City could benefit from the support of private-sector construction assistance. This may be true in the case of large diameter pipes buried to depths requiring sheet piling and dewatering should excavation be required. The City may also choose to use private contractors for open excavation operations that might exceed one day to complete. A list of the local vendors, suppliers and contractors who can provide rental equipment during a spill and their contact information is provided in Appendix B – Table 4.

1. Responsibilities of Spill Response Crew Upon Arrival

   It is the responsibility of the first personnel who arrive at the site of a spill to mitigate the impact of the overflow to public health and safety to the extent possible. Should the spill not be the responsibility of the City but there is imminent danger to public health, public or private property, or to the quality of waters of the U.S., then prudent emergency action shall be taken until the responsible party assumes responsibility and provides actions. Upon arrival at a spill, the response crew should do the following:

   - Determine the cause of the spill (e.g., sewer line blockage, pump station mechanical or electrical failure, sewer line break, etc.);
   - Identify and request, if necessary, assistance or additional resources to correct the overflow or to assist in the determining its cause;
   - Determine if private property is impacted. If yes, refer to Section 3.2 – Part 4;
   - Take immediate steps to stop the overflow (e.g., relieves pipeline blockage, manually operates pump station controls, repairs pipe, etc. as illustrated in Sewer Overflow

Action Plan (Appendix B)). Extraordinary steps may be considered where spills from private property threaten public health and safety (e.g., an overflow running off of private property into the public right-of-way);

- Request additional personnel, materials, supplies, or equipment that will expedite and minimize the impact of the spill.

2. Initial Measures for Containment

   Spill Response Crew shall initiate measures to contain the overflowing sewage and recover, where possible, sewage which has already been discharged, minimizing impact to public health or the environment.

   - Determine the immediate destination of the overflow (e.g., storm drain, street curb gutter, body of water, creek bed, etc.);
   - Investigate the extent of the spill, check storm drain maps and coordinate with the City storm water staff to determine how far downstream the spill travelled and whether it reached surface waters;
   - Identify and request the necessary materials and equipment to contain or isolate the overflow, if not readily available; and
   - Take immediate steps to contain the overflow (e.g., block or bag storm drains, recover through vacuum truck, divert into downstream manhole, etc.).

3. Sampling and Lab Tests

   For spills in which an estimated 50,000 gallons or greater are discharged into a surface water, water quality samples shall be collected **no later than eighteen (18) hours** after having knowledge of a potential discharge to a surface water. Water/Sewer Maintenance Supervisor shall be notified in order to contact **Alpha Analytical Laboratories Inc. at (707) 468-0401** and request that samples are taken as follows:

   - Collect one sample each day of the duration of the spill at:
     - The drainage conveyance system (DCS-001), if sewage discharges to a surface water via a drainage conveyance system; and
     - Each of the three receiving water sampling locations (RSW-001, RSW-001U, and RSW-001D);[1]

       If the receiving water has no flow during the duration of the spill, the City must report “No sampling due to no flow” for its receiving water sampling locations.

Table 1. Receiving Water Sampling Locations

Sampling Location	Sampling Location Description
DCS-001	A point in a drainage conveyance system before the drainage conveyance system flow discharges into a receiving water.

[1] Per Mendocino County Environmental Health Department, receiving water monitoring is required.

Sampling Location	Sampling Location Description
RSW-001 (Point of Discharge)	A point in the receiving water where sewage initially enters the receiving water.
RSW-001U (Upstream of Point of Discharge)	A point in the receiving water, upstream of the point of sewage discharge, to capture ambient conditions absent of sewage discharge impacts.
RSW-001D (Downstream of Point of Discharge)	A point in the receiving water, downstream of the point of sewage discharge, where the spill material is fully mixed with the receiving water.

- Upstream and downstream sample locations in the affected surface water are dependent on conditions at the time of the spill. If access is not an issue, it is important to obtain an upstream sample as close to the discharge outfall as possible, but far enough away to be sure that the sample is not affected by the discharge. The requirements to take and analyze the samples are represented in Appendix B – Table 5.
- Ask the lab to test for **total and fecal coliform (bacterial indicators)** and **ammonia**.
- If unacceptable downstream levels are observed (i.e., the concentration exceeds the threshold value indicated in Appendix B – Table 6) continue sampling until coliform and ammonia levels are below threshold values or until instructed to do so by the Mendocino County Environmental Health Department.

4. Additional Measures Under Potentially Prolonged Overflow Conditions

   In the event of a prolonged sewer line blockage or a sewer line collapse, set up a portable bypass pumping operation around the obstruction.

   - Take appropriate measures to determine the proper size and number of pumps required to effectively handle the sewage flow.
   - Implement continuous or periodic monitoring of the bypass pumping operation as required.
   - Address regulatory agency issues in conjunction with emergency repairs.

5. Cleanup

   Sewer overflow sites are to be thoroughly cleaned after an overflow, including removal of sewage from the drainage conveyance system. No readily identified residue (e.g., sewage solids, papers, rags, plastics, rubber products) is to remain and the spill area and drainage conveyance system are to be cleaned in a manner that does not inadvertently impact beneficial uses in the receiving waters.

   - Digital photos shall be taken of the area before and after the cleanup for documentation and to include in reports as applicable.
   - Where practical, the area is to be thoroughly flushed and cleaned of any sewage or washdown water. Solids and debris are to be flushed, swept, raked, picked up, and transported for proper disposal.

- The spill site is to be secured to prevent contact by members of the public until the site has been thoroughly cleaned. If posting is required, it shall be undertaken as described in Section 4.
- Where appropriate, the hard surface area of the spill site shall be disinfected and deodorized.
- Where sewage has resulted in ponding, the pond shall be pumped dry and the residue disposed of in accordance with applicable regulations and policies.
- If a ponded area contains sewage which cannot be pumped dry, it may be treated with bleach; **HOWEVER, if sewage has discharged into a natural body of water, bleach or other disinfectant SHALL NOT be used and the California Department of Fish and Game shall be contacted for specific instructions**.
- Use of portable aerators may be required where complete recovery of sewage is not practical and where severe oxygen depletion in existing surface water is expected.

3.4 OVERFLOW REPORT

The Sanitary Sewer Overflow Report (Appendix A) contains information which is required to be reported depending upon the nature of the spill.

For spills of any volume that reach any surface water, the Water/Sewer Maintenance Supervisor shall notify the State Office of Emergency Services (Cal OES) within two (2) hours of becoming aware of the discharge.

If the spill results in the killing of any fish or aquatic life, the Water/Sewer Maintenance Supervisor shall notify the California Fish and Game Department as soon as possible.

The Water/Sewer Maintenance Supervisor shall complete the Sanitary Sewer Overflow Report (Appendix A) and update Cal OES with a final spill volume when the overflow is eliminated.

Information regarding the spill shall include the following:

- Indication that the spill had reached surface waters, (e.g., all spills where sewage was observed running to surface waters), or there was obvious indication (e.g., sewage residue) that sewage flowed to surface waters; or
- Indication that the spill had not reached surface waters. Guidance in characterizing these overflows to include:
    a. Sewage overflows to covered storm drains (with no public access) where personnel verify, by inspection, that the entire volume is contained in a sump or impoundment and where complete clean-up occurs leaving no residue;
    b. Preplanned or emergency maintenance jobs involving bypass pumping (e.g., any flow diversion and altering normal operation of the sewer conveyance system) if access by the public to a bypass channel (e.g., ditch, pipe) is restricted and subsequent complete clean-up occurs leaving no residue (any preplanned bypass under these circumstances will not be considered an overflow); and

c. Spills where observation or on-site evidence clearly indicates all sewage was retained on land and did not reach surface water and where complete cleanup occurs leaving no residue.

- Determination of the start time of the sewer overflow by one of the following methods:
  a. Date and time information received and/or reported to have begun and later substantiated by a sewer investigator or response crew;
  b. Visual observation; or
  c. Pump station and lift station flow charts and other recorded data.
- Determination of the stop time of the sewer overflow by one of the following methods:
  a. When the blockage is cleared or flow is controlled or contained; or
  b. The arrival time of the sewer investigator or response crew, if the overflow stopped between the time it was reported and the time of arrival.
- An estimation of the rate of sewer overflow in gallons per minute (gpm) by one of the following criteria:
  a. Direct observations of the overflow; or
  b. Measurement of actual overflow from the sewer main.

  See Appendix C for guidance on estimating sanitary sewer overflow volumes and flow rates.
- Determination of the volume of the sewer overflow:
  a. When the rate of overflow is known, multiply the duration of the overflow by the overflow rate; or
  b. When the rate of overflow is not known, investigate the surrounding area for evidence of ponding or other indications of overflow volume.

  See Appendix C for guidance on estimating sanitary sewer overflow volumes and flow rates.
- Photographs of the event.
- Assessment of any damage to the exterior areas of public/private property. Personnel shall not enter private property for purposes of estimating damage to structures, floor and wall coverings, and personal property.

  See Appendix C for guidance on estimating sanitary sewer overflow volumes and flow rates.

3.5 CUSTOMER SATISFACTION

The Water/Sewer Maintenance Supervisor or his/her designated personnel shall follow up in person or by telephone with the citizen(s) reporting the overflow. The cause of the overflow and its resolution will be disclosed. See Appendix D for Sanitary Sewer Overflow Survey questionnaire.

3.6 ADDITONAL COORDINATION AND POST-SPILL ACTIVITIES

The City will continue to implement pre-planned coordination, interagency coordination, and collaboration with other utility agencies/departments prior, during, and after a spill event. In addition, the City will implement technologies, practices, and equipment as needed to expedite spill containment and recovery efforts.

The City will conduct post-spill assessments of spill response activities and discuss these results with applicable City staff to ensure any response issues are identified and addressed in a timely manner. The City will continue to document and report spill events as required in the 2022 SSS WDR.

4 PUBLIC ADVISORY PROCEDURE

This section describes the actions the City takes, in cooperation with the Mendocino County Environmental Health Department, to limit public access to areas potentially impacted by unpermitted discharges of pollutants to surface water bodies from the wastewater collection system.

4.1 TEMPORARY SIGNAGE

The City will coordinate with Mendocino County Environmental Health Department to determine when to post notices of polluted surface water bodies or ground surfaces that result from uncontrolled wastewater discharges from its facilities. The postings do not necessarily prohibit use of recreational areas, unless posted otherwise, but provide a warning of potential public health risks due to sewage contamination.

Creeks, streams, and beaches that have been contaminated as a result of a spill should be posted at visible access locations until the risk of contamination has subsided to acceptable background levels.

The warning signs, once posted, should be checked every day to ensure that they are still in place. “Closed” signs shall be posted at the outfall and a minimum of 100 feet upstream and 100 feet downstream of the discharge. If there is a large volume of sewage, more signs must be posted downstream.

Signs must remain posted until at least two (2) consecutive days of samplings meet the standards as listed in Appendix B – Table 6.

4.2 OTHER PUBLIC NOTIFICATION

Should the posting of surface water bodies or ground surfaces subjected to a spill be deemed necessary by Mendocino County Environmental Health Department, the Water/Sewer Maintenance Supervisor shall determine the need for further public notification through the use of pre-scripted notices made available to the printed or electronic news media for immediate publication or airing, or by other measures (e.g., front door hangers).

5 REGULATORY AGENCY NOTIFICATION PLAN

This section establishes procedures which the City follows to provide formal notice to the regulatory agencies in the event of a spill. Agency notifications shall be performed in parallel with other internal notifications.

The reporting procedure shall be pursuant to the Notification, Monitoring, Reporting and Recordkeeping Requirements for Statewide General Waste Discharge Requirements for Sanitary Sewer System (Attachment E1 of the 2022 SSS WDR).

5.1 IMMEDIATE NOTIFICATION

1. Immediately report spills of any volume that results in a discharge to a drainage channel and/or surface water to the Cal OES at (800) 852-7550, within two (2) hours of City field staff becoming aware of the discharge.
2. Report any Category 1and Category 2 Spills (refer to Section 2.4 Definitions) to the Online CIWQS Sanitary Sewer Database at https://ciwqs.waterboards.ca.gov/ as soon as possible but no later than three (3) business days after the City is made aware of the spill event. A final certified report shall be completed through the Online CIWQS Sanitary Sewer Database, within fifteen (15) calendar days of the conclusion of spill response and remediation.
3. Report all other spills to the Online CIWQS Sanitary Sewer Database within thirty (30) days after the end of the calendar month in which the spill occurs.
4. For spills where more than 50,000 gallons reached surface waters, submit a Spill Technical Report through the Online CIWQS Sanitary Sewer Database https://ciwqs.waterboards.ca.gov/ within forty-five (45) days of the spill end date.

A complete list of the regulatory agencies and requirements for how to notify them is shown in Appendix E.

5.2 SECONDARY NOTIFICATION

After those parties identified in Section 1 have been contacted, the Water/Sewer Maintenance Supervisor shall contact other agencies, as necessary, as well as other interested and possibly impacted parties.

1. The Water/Sewer Maintenance Supervisor may report private lateral spills using the Online CIWQS Sanitary Sewer Database, specifying that the sewage discharge occurred and was caused by a private lateral and identifying the responsible party (other than the City), if known.
2. If there are no spills during a calendar month, the Water/Sewer Maintenance Supervisor shall submit an electronic certified report that the City did not have any spills, within thirty (30) calendar days after the end of each calendar month.

5.3 SPILL DOCUMENTATION

All spills should be thoroughly investigated and documented for use in managing the sewer system and meeting established reporting requirements.

The Spill Response Crew completes the Sanitary Sewer Overflow Report (Appendix A) within twenty-four (24) hours of the spill confirmation. The Water/Sewer Maintenance Supervisor is responsible for reviewing, updating and signing the report. The complete report will be placed in the Spill Response Binder. Each individual spill file should include the following information:

- Initial service call information;
- Sanitary Sewer Overflow Report (Appendix A);
- Photos;
- Copies of the California Integrated Water Quality System (CIWQS) certified report forms;
- Volume estimate;
- Steps that have been and will be taken to prevent the spill from recurring and a schedule to implement those steps; and
- Water quality sampling and test results, if applicable.

The 2022 SSS WDR requires that individual spill records be maintained by the City for a minimum of **five (5) years** from the date of the spill. This period may be extended when requested by the RWQCB Executive Officer. All records and documentation of performance and implementation measures for the previous five years shall be made available for review upon SWRCB, RWQCB, or EPA staff's request.

6 MEDIA NOTIFICATION PROCEDURE

When a sanitary sewer overflow has been confirmed and is a threat to public health, take the following actions, if necessary, to notify the media:

1. Spill Response Crew verifies overflow and reports back to the Water/Sewer Maintenance Supervisor.
2. The Water/Sewer Maintenance Supervisor informs the Public Information Officer (PIO) – at (707) 463-6213. The PIO shall be the “first-line” of response to the media for any overflows.
3. After hours and weekend sewer overflows are reported to the PIO via confidential phone numbers kept at the City and with the Water/Sewer Maintenance Supervisor.
4. Calls received by the dispatcher from the media at any time are referred to the PIO.

7 DISTRIBUTION AND MAINTENANCE OF SERP

Annual updates to the SERP reflect all changes in policies and procedures as may be required to achieve its objectives.

7.1 AVAILABILITY OF SERP

Distribute copies of the SERP and any amendments to the following departments and functional positions:

- Water/Sewer Services Attendant
- Water/Sewer Spill Response Crew

- Water/Sewer Maintenance Supervisor
- Wastewater Treatment Plant Supervisor
- Water/Sewer Administration Office

All other personnel who may become incidentally involved in responding to spill shall be familiarized with the SERP.

7.2 REVIEW AND UPDATE OF SERP

As required under the 2022 SSS WDR, the SERP is to be reviewed, and its effectiveness assessed on an annual basis. The Water/Sewer Division shall annually review the SERP to ensure the SERP and related documents are current, correct, and applicable. Any changes or updates should be made as needed. Additionally, the SERP shall be incorporated into the City's Sanitary Sewer Management Plan (SSMP).

7.3 TRAINING

The City has a specific budget item for sewer system staff training. All of the current sewer operation and maintenance staff are CWEA-certified and are trained in overflow emergency response procedures.

Training on the SERP shall be provided to all Water/Sewer Division staff members. The training shall be conducted by the Water/Sewer Maintenance Supervisor or his/her designee. The Water & Sewer Maintenance Supervisor makes sure the employees have the necessary skills to perform the operations and maintenance required by going over the standard operating procedures for all sewer operation and maintenance crew.

The trainer shall have extensive knowledge of not only the SERP but also the City of Ukiah and its staff, resources, field conditions, policies and procedures as they apply to the sewer system maintenance and emergency response.

Training shall be provided annually with the exception that the initial training be held within one (1) month following the completion of the SERP. Records of individuals' training including date, time, place, content, name of trainer(s), and names of attendees shall be kept in support of this plan.

Contractors that perform work within the City or District shall meet the minimum safety requirements set forth by California OSHA and any training guidelines set forth by CWEA for collection system work.

Plumbing contractors are also notified about the potential impact of their work on the City's sanitary sewer system as part of Russian River Watershed Association (RRWA) outreach program. More information is provided in SSMP Element 4 – Operation and Maintenance Program.

Spill Emergency Response Plan Appendices

Appendix A: Sanitary Sewer Overflow Report

Appendix B: Sanitary Sewer Overflow Action Plan

Appendix C: SSO Volume and Flow Rate Resources

Appendix D: Sanitary Sewer Overflow Survey

Appendix E: SSO Regulatory Agencies Notification Requirements

Appendix F: Sample Warning Signs

SERP APPENDIX A

SANITARY SEWER OVERFLOW REPORT

SANITARY SEWER OVERFLOW REPORT

STOPPAGE ☐ OVERFLOW ☐ REPORT NO. _____

Name of Person Completing this Report: _____

Date of SSO:

MONTH	DAY	YEAR

Time Notified	Time of Arrival at Site	Time SSO stopped	Estimated Duration (min)

LOCATION			
Street Address	District / CSA	Latitude	Longitude

ESTIMATED AMOUNT OF OVERFLOW		
	Gallons	Descriptions
Estimated SSO Volume		
Estimated Volume of SSO Recovered		
Estimated Volume of SSO Reached Surface Water		

FINAL SSO DESTINATION		
Surface Waters Affected	Evidence of Fish Kill	Samples Collected
YES ☐ _____	YES ☐	YES ☐
NO ☐	NO ☐	NO ☐

CAUSE	PIPE INFORMATION	
Broken Pipe ☐	AC ☐	CI / DI ☐
Grease ☐	VCP ☐	Plastic ☐
Roots ☐	CP ☐	Other ☐
I & I ☐	Line Size: _____	
Other ☐ _____	Feet to Stoppage from Downstream Manhole: _____	

CORRECTION, CLEANUP, CREW AND EQUIPMENT				
Correction actions taken: _____				
Vacuumed Debris ☐	Flushed Area ☐	Signage Posted ☐	No. of Days Signs Posted: _____	
Gallons of Flush Water Used: _____		Gallons of Flushed Water Recovered: _____		
Crew (Initials)	Time (hrs)	Equipment	Time (hrs)	Materials Used

Prepared by:_____ Date:_____ Reviewed by:_____ Date:_____

REGULATORY AGENCY SPILL NOTIFICATION				
Notified Agency (not all required)	Notified by:	Reported to:	Time reported:	Check if reported to voicemail
California OES ☐				☐
County Health ☐				☐
California DF&G ☐				☐

ATTACHED DOCUMENTATION		
Photos	Sketches	Calculations
Video	Video	Other
Digital Photos ☐	File name and Directory: ☐	☐
☐	☐	☐ _____

INTERNAL NOTIFICATION		
Name:	Notified by:	Time Notified:

OTHER NOTIFICATIONS			
Name of Notified Agency or City	Notified by:	Reported to:	Time Notified:

ADDITIONAL COMMENTS

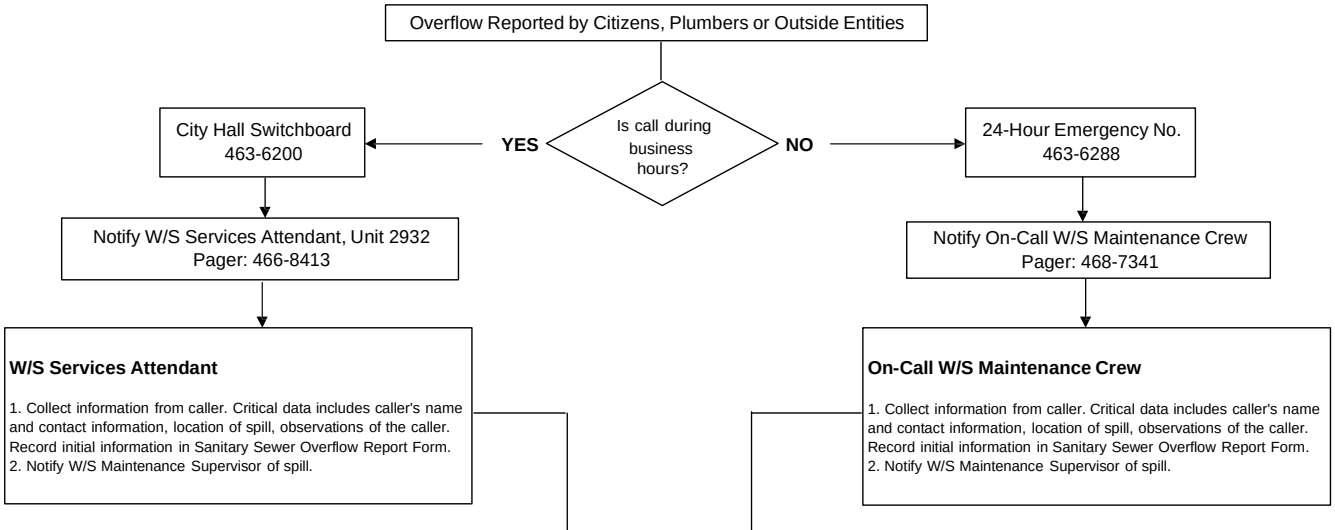
Prepared by:_____ Date:_____ Reviewed by:_____ Date:_____

SERP APPENDIX B

SANITARY SEWER OVERFLOW ACTION PLAN

CITY OF UKIAH
UKIAH PUBLIC WORKS, WATER/SEWER DIVISION

Sanitary Sewer Overflow Response and Notification Diagram



Spill Response Crew

1. Assemble and coordinate response crew.
2. Dispatch response crew to spill location.
3. Document time of response crew dispatch.
4. Assess overflow conditions when arriving at spill location.
   A. Notify W/S Maintenance Supervisor if spill is entering creek, strom drain or other surface water.
   B. Notify W/S Maintenance Supervisor if additional resources are needed to control spill.
5. Document time of arrival.
6. Begin spill containment if spill is threatening to enter surface waters, stormdrains or private property.
7. Document spill conditions, estimate rate and volume. Take pictures if possible. Documentation is important but should not interfere with initial efforts to control spill if surface waters or private property is threatened.
8. Retify cause of spill and cleanup site.
9. Document time spill is stopped.
10. Confer with W/S Maintenance Supervisor regarding posting signs. Post Public Notification as directed by W/S Maintenance Supervisor.
    A. Confirm decision to post signs with Utility Director and County Health.
    B. Confer with County Health when removing signs. Request work to be done, notify PIO.
11. Complete Sanitary Sewer Overflow Report form SSORP-Appendix A and other documentations. Initial the Chain of Custody and forward the completed form to the next person or staff position listed.
12. Report spill details to W/S Maintenance Supervisor.
13. Document time spill response team leaves site.

CITY OF UKIAH

PUBLIC WORKS, WATER/SEWER DIVISION

Table 1 - Internal Officials Contact Information

	Name	Title	Home Address	Home Phone #	Cell Phone #
Water/Sewer Administration	Sean White	Director			
	Jarod Thiele	Project Analyst			
Water/Sewer Maintenance	Don Brown	Supervisor			
	Nick Kirby	Lead Worker	INFORMATION AVAILABLE IN INTERNAL COPIES OF SSMP.		
	Jim Eddie	Service Attendant			
	Mario Dogali	Attendant II			
	John Aguilar	Attendant II	NOT POSTED ONLINE.		
	Robert Hulbert	Attendant II			
	Scott Norcross	Attendant II			
	Nick Weiss	Attendant I			
	Vincente Martinez	Attendant I			

AFTER HOURS:
Water/Sewer Maintenance: 707-391-8260 (Cell Phone)
Waste Water Treatment Plant: 707-272-3920 (On-Call Operators Phone) or 707-467-2818 (Plant Phone)

Note:
In cases involving private property accidents including bodily injury of a private citien, sewer backups, or substantial private property damage, one of the investigators/adjustors at:

CAL NORTH ADJUSTERS
122 Calistoga Rd, #246
Santa Rosa, CA 95402

During Working Hours: Call Main Office **707-539-7785**
During Non-Woring Hours: Call Ed Chasco 707-548-2165 (cell)
707-539-7071 (direct office)
707-584-7990 (home)

or
Chuck Veader 707-328-1539 (cell)
707-539-7785 (office line)

Table 2 - Spill Response Emergency Equipment

Equipment	Voltage	Power	Fuel	Size	Driver	Length	Connections	Location	Comment
Emergency generators									
1 Honda	120V	60HZ	Gas	2.0KV				Corp Yard	
1 Honda	240V	60HZ	Gas	5.0KV				Corp Yard	
Portable pumps									
1 Honda	5HP	Engine	Gas	2 1/2"			Quick Con.	Corp Yard	Threaded Exit
3 Honda	5HP	Engine	Gas	1 1/2"			Quick Con.	Corp Yard	Threaded Exit
Hose	SIZE	LENGTH							
6 Rolls	1 1/2	50'					Threaded	Corp Yard	
16 Rolls	2 1/2	50'					Threaded	Corp Yard	
Evactors / Rodders	VEHICLE								
1	Vacon							Corp Yard	
3	Vactor							Corp Yard	
Trucks									
Heavy									
2	5YD							Corp Yard	
1	6YD							Corp Yard	
Light									
6	Service		6 Pick-ups					Corp Yard	
1 Light Stand	300-1000V		Diesel			10'-40'		Corp Yard	
3 Portable light stand	115V		Electric					Corp Yard	
Traffic Control									
Cones									
Small	100							Corp Yard	
Large	100							Corp Yard	
Barricades	200								
Flashing Barricades	20								
Delinators	40							Corp Yard	
Repair Supplies								Corp Yard	
Sand Bags									
2bx Sock Absorbent								Corp Yard	Bag Island in Yard
Wattles 100"								Corp Yard	Bag Island in Yard

CITY OF UKIAH
UKIAH PUBLIC WORKS, WATER/SEWER DIVISION

Table 3 - Lift Stations

Lift Station	Address	Direction to Nearest Surface Water	No. of Pumps	Horse Power	Power	Emergency Power
Ford & Orchard	568 Ford St., Ukiah	400 feet North to Orr Creek	2	2.4 HP	230-V 1-Phase	No
Vichy Springs	200 View Dr., Ukiah	300 feet North to Sulphur Creek	2	5 HP	230-V 1-Phase	No
El Dorado	851 Ford Rd., Ukiah	100 feet West to Russian River	2	2 HP	230-V 1-Phase	No

CITY OF UKIAH
UKIAH PUBLIC WORKS, WATER/SEWER DIVISION

Table 4 - Contractor Equipment Rental List

Contractor Rental	Address	Phone	After Hours	Contact
Hertz Equipment Rental	Ukiah	707-463-5844		
United Rentals	Santa Rosa	707-585-7621	707-973-6614 707-952-9955	
Rental Place	Rohnert Park	707-584-9217		
Hertz Big 4 Rentals	Rohnert Park	707-586-4444	707-973-6540	Steve City
LJ Construction	Sebastopol	707-823-0247		
Aaction Rentals	Windsor	707-838-4379		
Cal-West Rentals Inc.	Petaluma	707-763-5665		
Sonoma Rentals	Sonoma	707-938-0711		Hector
Novato Rent-All	Novato	415-892-4621		
Tell Rentals Inc.	Vallejo	707-644-4438		
Gotelli's Rental Service	San Rafael	415-453-6940		
International Construction Inc.	Vallejo	707-643-8898		
Vallejo Rent-All	Vallejo	707-643-1755		

CITY OF UKIAH
UKIAH PUBLIC WORKS, WATER/SEWER DIVISION

Table 5 - Sample Requirements

Analysis	Sample Size	Preservative	Holding Period
Ammonia Nitrogen			
Selective Electrode Method 4500 NH3-D	200 - 500 ml	Store at 4-deg. C Acidify (pH 1.5 - 2) with H_2SO_4	Up to 24 hours, acidify for longer storage.
Titrimetric Method 4500 NH3-C	200 - 500 ml	Store at 4-deg. C Acidify (pH 1.5 - 2) with H_2SO_4	Up to 24 hours, acidify for longer storage.
Fecal Coliform **Total Coliform**			
Fecal Coliform Direct Test (A-1 Medium) 9221 E	250 - 500 ml	Temp < 10-deg. C	24 hours

Table 6 - Surface Water Benchmark Levels

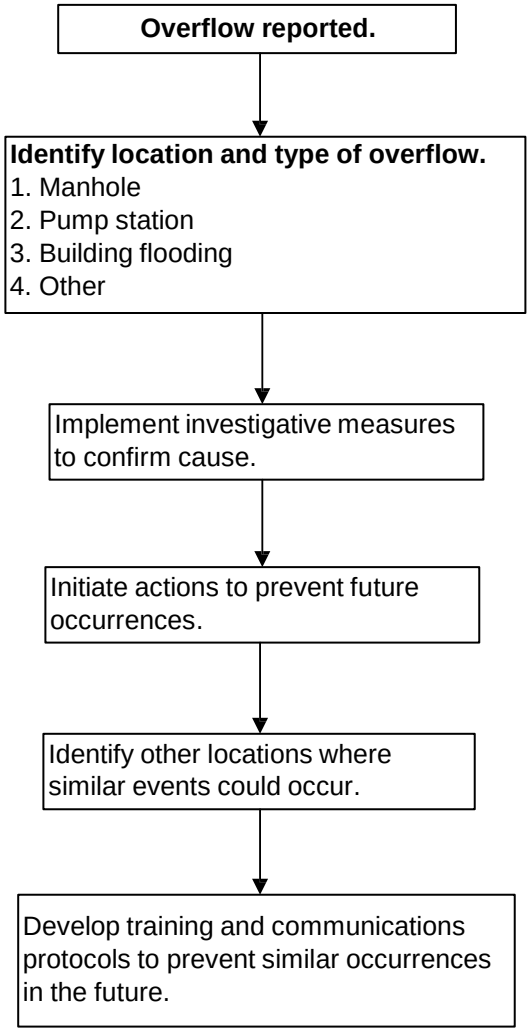
Parameter	Units	Typical Values	Values of Concern
Ammonia-N	milligram per liter (mg/l)	< 1	2
Fecal Coliform	Most Probable Number per 100 milliliters (MPN/100 ml)	20	200

Source: Linvil G. Rich, Environmental Systems Engineering, McGraw-Hill, New York, (1973).

CITY OF UKIAH

UKIAH PUBLIC WORKS, WATER/SEWER DIVISION

Investigative Process for Identifying Overflow Causes and Preventing Future Occurrences



Investigative Chart to Determine SSO Causes, Corrective Actions and Preventive Measures

Legend

a	hydraulic modeling
b	engineering evaluation support
c	closed circuit television inspection (CCTV)
d	smoke testing
e	dyed water flood testing
f	dyed water flood testing with CCTV
g	temporary flow monitoring.
h	night time flow isolation testing
ı	rainfall simulation testing
J	manhole inspection
k	line Iamping
I	ground-penetrating radar (voids under pavement)
m	ground survey (establish inlet/outlet pipe inverts in u/s & dis manholes)
n	construction observation/inspection
p	piezometric data
q	check pump station status - pump and drive equipment, instrumentation and controls, motor control center, hydraulic surge arrestor, check valves, standby power, etc.
r	inspect right-of-way/easement
t	contact power company

CITY OF UKIAH

UKIAH PUBLIC WORKS, WATER/SEWER DIVISION

Investigative Chart to Determine SSO Causes,
Corrective Actions and Preventative Measures

Location / Type of Overflow	Cause	Possible Investigative Steps	Actions to Prevent Future Occurrences
1. Manhole	Trunk, Interceptor and Collector Sewer Stoppage & Surcharge Due to:		
	Hydraulic capacity limit (dry weather)	a,b,g	Clean more frequently until line is relieved; temporarily escalate wastewater minimization practices through public education/notification practices; report to engineering
	Rain-dependent Infiltration (pipe defects)	b,c,d,e	Clean more frequently prior to capital III rehabilitation; report to engineering
	Inflow (x-connect, manhole cover)		Remove x-connect; install manhole inflow protectors
	Groundwater infiltration	d,h,r	Clean more frequently prior to capital III rehabilitation
	Debris deposition	c,j,k	Clean line; monitor need for increased cleaning frequency
	Partial/ totalline collapse	c,k,l	Make point repair
	Sag	c,k	Make point repair
	Flat / reverse grade	k,m	Clean more frequently until capital improvement made
	Severely offset joints	c,k	Make point repair
	Grease	c,j	Thoroughly clean the line; escalate source control efforts
	Roots	c,k,j	Mechanically or chemically remove roots; exercise source control
	Protruding tap (collector sewer)	c	Remove protruding tap
	Vandalism	c,j,k	Bolt down manhole cover to keep foreign material out; coordinate with police for increased patrolling of area
	Adjacent Construction Activities	c,g,k,n,r	Increase Agency monitoring of 3rd party construction activities; monitor flows
	Downstream Pump Station Failure	q	See #4 Pump Station / Transmission System

CITY OF UKIAH
UKIAH PUBLIC WORKS, WATER/SEWER DIVISION

Investigative Chart to Determine 550 Causes,
Corrective Actions and Preventative Measures

Location / Type of Overflow	Cause	Possible Investigative Steps	Actions to Prevent Future Occurrences
2. Building Flooding	Service lateral stoppage due to:		(Note: Responsibilities of owner unless noted otherwise)
	Collapse, sag	c	Engage services of a plumber
	Grease, debris and roots	c	Engage services of a plumber or line cleaning service; consider replacement of service if a chronic problem; install additional clean out(s) as necessary
	Infiltration /Inflow	c,d,e,l	Remove inflow sources, e.g., sump drains, roof leaders
	Defective service connection at collector sewer	c	Proper reconnection by Agency
	Collector sewer backup into service lateral	See #1Manhole	See #1 Manhole; Agency responsibility If lowest fixture is at least 1 foot above upstream MH Agency has responsibility to correct problem, if lower than 1 foot property owner should install backflow device.

CITY OF UKIAH
UKIAH PUBLIC WORKS, WATER/SEWER DIVISION

Investigative Chart to Determine SSO Causes, Corrective Actions and Preventative Measures

Location / Type of Overflow	Cause	Possible Investigative Steps	Actions to Prevent Future Occurrences
3. P.S. / Trans. System - Wet Well - Inlet Pipe - Outlet Pipe (force main)	Primary power failure	b,t	Arrange for standby power
	Standby power failure	b,q	Make repair; periodic load bank testing; exercise equipment weekly; increase preventive maintenance (PM).
	Pump / Drive failure	b,q	Make repair; increase preventative maintenance; keep portable pumping available nearby; consider unit replacement or rehab.
	Force main failure	b,r	Make point repair; inspect interior main walls upstream & downstream of repair; consider replacement of line; assess need for corrosion control.
	Equip. controls / switch gear failure		Make repair; increase preventative maintenance
	Hydraulic capacity limit	b,r	Perform pump test; check test curves against design criteria and actual flows; temporarily escalate waste-water minimization practices in tributary area in interim until capital improvements are made; supply portable pump to augment capacity.
	Vandalism	q	Coordinate with police for increased patrolling of area; make less accessible with fencing; fortify vault and door security; alarm and enhance outdoor lighting.

CITY OF UKIAH
UKIAH PUBLIC WORKS, WATER/SEWER DIVISION

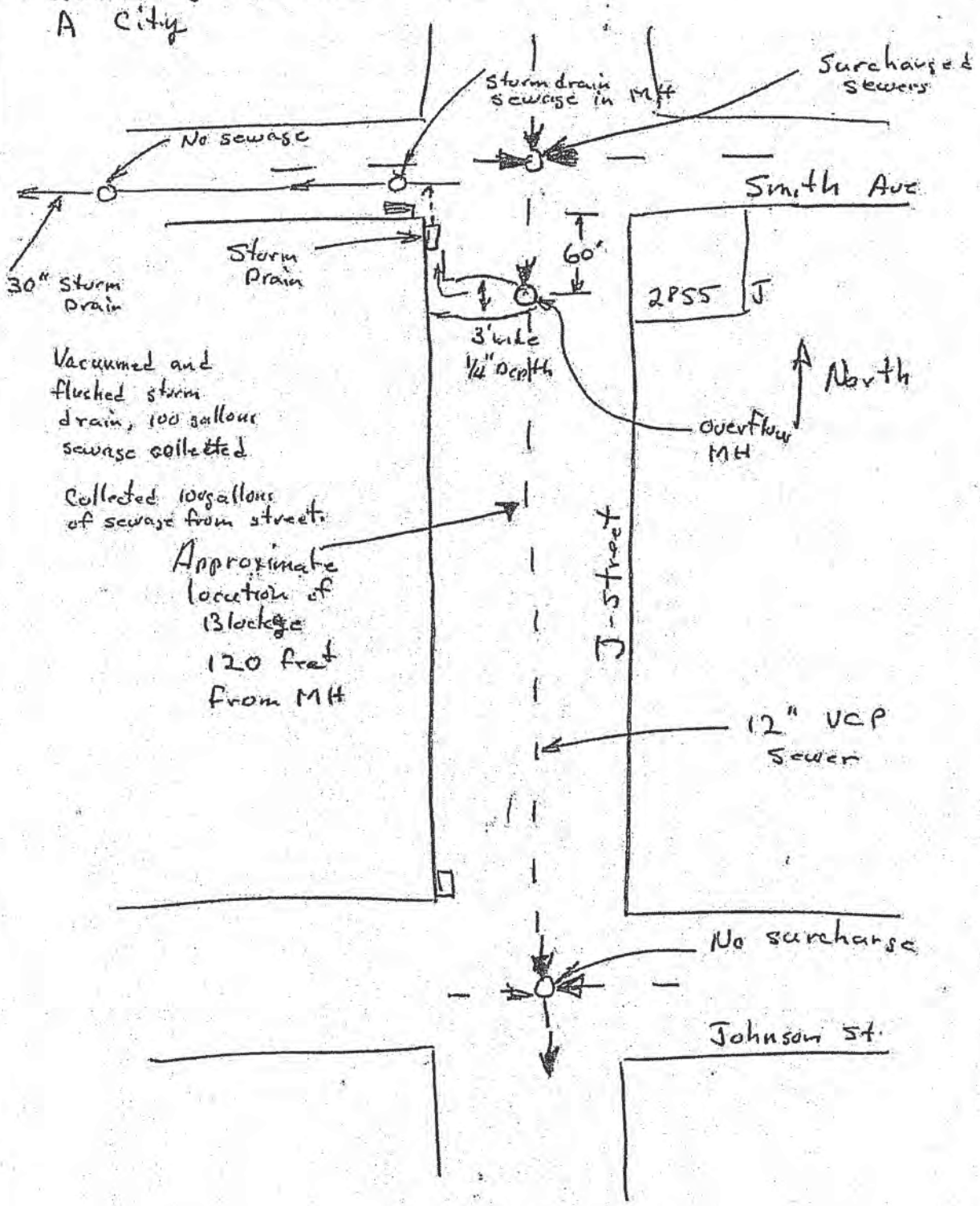
Investigative Chart to Determine SSO Causes, Corrective Actions and Preventative Measures

Location / Type of Overflow	Cause	Possible Investigative Steps	Actions to Prevent Future Occurrences
4. Suspended & Buried Pipelines, Siphons, Air / Vac Releases, Vaults, and Other Appurtenances	Pipeline collapse & severe exfiltration	c,d,e,j,k,l,q	Confirm point repair is tied to sound existing pipe material.
	Washout at subaqueous creek / river crossing	j,q	Protect repaired line with rip rap, gabions, etc.; stabilize any further bank / invert "down cutting" (erosion) by surface water.
	Adjacent construction activities	n,q	Increase Agency monitoring of 3rd party construction activities.
	Vandalism	q	Coordinate with police for increased patrolling of area; make less accessible with fencing & other measures.
	Air / Vac Release "blowoff"	q	Direct the blowoff to nearest downstream sewer; increase air / vac valve maintenance.

Example Sketch

Spill No. 55
Sketch made by: Jack Smith.
Sept 10, 2000

2855 J street
A City



22-141 50 SHEETS
22-142 100 SHEETS
22-144 200 SHEETS
AMPAD

SERP APPENDIX C

SSO VOLUME AND FLOW RATE RESOURCES

Methods for Estimating Spill Volume

A variety of approaches exist for estimating the volume of a sanitary sewer spill. Three methods that are most often employed. The person preparing the estimate should use the method most appropriate to the sewer overflow in question and use the best information available.

Method 1 Eyeball Estimate

The volume of small spills can be estimated using an "eyeball estimate". To use this method imagine the amount of water that would spill from a bucket or a barrel. A bucket contains 5 gallons and a barrel contains 50 gallons. If the spill is larger than 50 gallons, try to break the standing water into barrels and then multiply by 50 gallons. This method is useful for contained spills up to approximately 200 gallons.

Method 2 Measured Volume

The volume of most small spills that have been contained can be estimated using this method. The shape, dimensions, and the depth of the contained wastewater are needed. The shape and dimensions are used to calculate the area of the spills and the depth is used to calculate the volume.

Step 1 Sketch the shape of the contained sewage (see Figure 1).

Step 2 Measure or pace off the dimensions.

Step 3 Measure the depth at several locations and select an average.

Step 4 Convert the dimensions, including depth, to feet.

Step 5 Calculate the area in square feet using the following formulas:

Rectangle:	Area = length (feet) x width (feet)
Circle:	Area = diameter (feet) x diameter (feet) x 3.14
Triangle:	Area = base (feet) x height (feet) x 0.5

Step 6 Multiply the area (square feet) times the depth (in feet) to obtain the volume in cubic feet.

Step 7 Multiply the volume in cubic feet by 7.5 to convert it to gallons

Method 3 Duration and Flowrate

Calculating the volume of larger spills, where it is difficult or impossible to measure the area and depth, requires a different approach. In this method, the separate estimates are made of the duration of the spill and the flowrate. The methods of estimating duration and flowrate are:

Duration: *The duration is the elapsed time from the time the spill started to the time that the flow was restored.*

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City of San Diego
Metropolitan Wastewater Department

Reference Sheet for Estimating Sewer Spills from Overflowing Sewer Manholes

All estimates are calculated in gallons per minute (gpm)

Wastewater Collection Division
(619) 654-4160

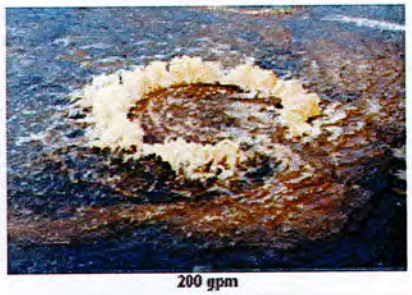
5 gpm

25 gpm

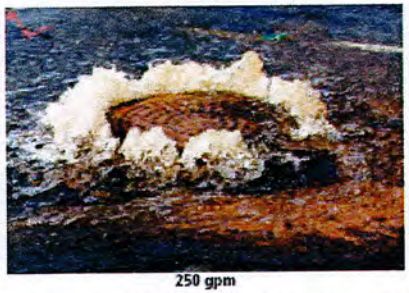
50 gpm

100 gpm

150 gpm


200 gpm

225 gpm


250 gpm

275 gpm

All photos were taken during a demonstration using metered water from a hydrant in cooperation with the City of San Diego's Water Department.

rev. 4/99

Attachment D - Sample Templates for SSO Volume Estimation

TABLE 'A'

ESTIMATED SSO FLOW OUT OF M/H WITH COVER IN PLACE

24" COVER

Height of spout above M/H rim H in Inches	S S O FLOW Q in gpm	Q in MGD	Min. Sewer size in which these flows are possible
1/4	1	0.001	
1/2	3	0.004	
3/4	6	0.008	
1	9	0.013	
1 1/4	12	0.018	
1 1/2	16	0.024	
1 3/4	21	0.030	
2	25	0.037	
2 1/4	31	0.045	
2 1/2	38	0.054	
2 3/4	45	0.065	
3	54	0.077	
3 1/4	64	0.092	
3 1/2	75	0.107	
3 3/4	87	0.125	
4	100	0.145	
4 1/4	115	0.166	
4 1/2	131	0.189	
4 3/4	148	0.214	
5	166	0.240	
5 1/4	185	0.266	
5 1/2	204	0.294	
5 3/4	224	0.322	6"
6	244	0.352	
6 1/4	265	0.382	
6 1/2	286	0.412	
6 3/4	308	0.444	
7	331	0.476	
7 1/4	354	0.509	
7 1/2	377	0.543	
7 3/4	401	0.578	8"
8	426	0.613	
8 1/4	451	0.649	
8 1/2	476	0.685	
8 3/4	502	0.723	
9	529	0.761	

36" COVER

Height of spout above M/H rim H in Inches	S S O FLOW Q in gpm	Q in MGD	Min. Sewer size in which these flows are possible
1/4	1	0.002	
1/2	4	0.006	
3/4	8	0.012	
1	13	0.019	
1 1/4	18	0.026	
1 1/2	24	0.035	
1 3/4	31	0.044	
2	37	0.054	
2 1/4	45	0.065	
2 1/2	55	0.079	
2 3/4	66	0.095	
3	78	0.113	
3 1/4	93	0.134	
3 1/2	109	0.157	
3 3/4	127	0.183	
4	147	0.211	
4 1/4	169	0.243	
4 1/2	192	0.276	
4 3/4	217	0.312	6"
5	243	0.350	
5 1/4	270	0.389	
5 1/2	299	0.430	
5 3/4	327	0.471	
6	357	0.514	
6 1/4	387	0.558	8"
6 1/2	419	0.603	
6 3/4	451	0.649	
7	483	0.696	
7 1/4	517	0.744	
7 1/2	551	0.794	
7 3/4	587	0.845	10"
8	622	0.896	
8 1/4	659	0.949	
8 1/2	697	1.003	
8 3/4	734	1.057	
9	773	1.113	

Disclaimer:
This sanitary sewer overflow table was developed by Ed Euyen, Civil Engineer, P.E. No. 33955, California, for County Sanitation District 1. This table is provided as an example. Other Agencies may want to develop their own estimating tables.

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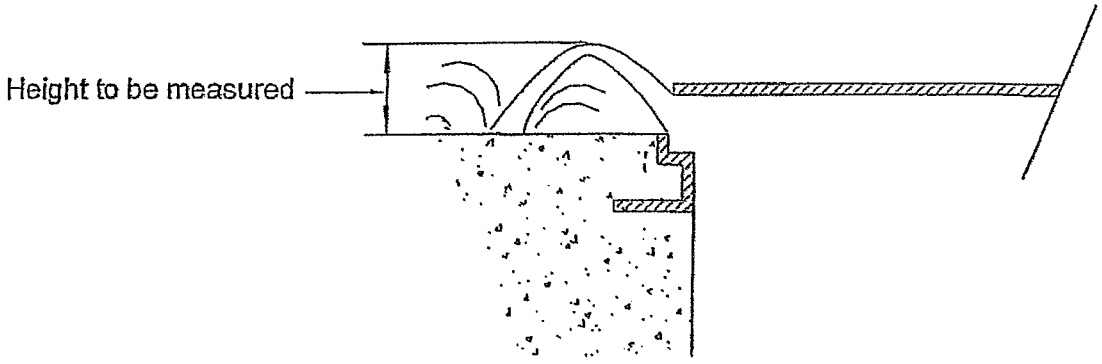
The formula used to develop Table A measures the maximum height of the water coming out of the maintenance hole above the rim. The formula was taken from hydraulics and its application by A.H. Gibson (Constable & Co. Limited).

Example Overflow Estimation:

The maintenance hole cover is unseated and slightly elevated on a 24" casting. The maximum height of the discharge above the rim is 5 ¼ inches. According to Table A, these conditions would yield an SSO of 185 gallons per minute.

FLOW OUT OF M/H WITH COVER IN PLACE



This sanitary sewer overflow drawing was developed by Debbie Myers, Principal Engineering Technician, for Ed Euyen, Civil Engineer, P.E. No. 33955, California, of County Sanitation District 1.

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TABLE 'B'

ESTIMATED SSO FLOW OUT OF M/H WITH COVER REMOVED

24" FRAME

Water Height above M/H frame H in inches	S S O FLOW Q in gpm	in MGD	Min. Sewer size in which these flows are possible
1/8	28	0.04	
1/4	62	0.09	
3/8	111	0.16	
1/2	160	0.23	
5/8	215	0.31	6"
3/4	354	0.51	8"
7/8	569	0.82	10"
1	799	1.15	12"
1 1/8	1,035	1.49	
1 1/4	1,340	1.93	15"
1 3/8	1,660	2.39	
1 1/2	1,986	2.86	
1 5/8	2,396	3.45	18"
1 3/4	2,799	4.03	
1 7/8	3,132	4.51	
2	3,444	4.96	21"
2 1/8	3,750	5.4	
2 1/4	3,986	5.74	
2 3/8	4,215	6.07	
2 1/2	4,437	6.39	
2 5/8	4,589	6.58	24"
2 3/4	4,687	6.75	
2 7/8	4,799	6.91	
3	4,910	7.07	

36" FRAME

Water Height above M/H frame H in Inches	S S O FLOW Q in gpm	in MGD	Min. Sewer size in which these flows are possible
1/8	49	0.07	
1/4	111	0.16	
3/8	187	0.27	6"
1/2	271	0.39	
5/8	361	0.52	8"
3/4	458	0.66	
7/8	556	0.8	10"
1	660	0.95	12"
1 1/8	1,035	1.49	
1 1/4	1,486	2.14	15"
1 3/8	1,951	2.81	
1 1/2	2,424	3.49	18"
1 5/8	2,903	4.18	
1 3/4	3,382	4.87	
1 7/8	3,917	5.64	21"
2	4,458	6.42	
2 1/8	5,000	7.2	24"
2 1/4	5,556	8	
2 3/8	6,118	8.81	
2 1/2	6,764	9.74	
2 5/8	7,403	10.66	
2 3/4	7,972	11.48	30"
2 7/8	8,521	12.27	
3	9,062	13.05	
3 1/8	9,604	13.83	
3 1/4	10,139	14.6	
3 3/8	10,625	15.3	36"
3 1/2	11,097	15.98	
3 5/8	11,569	16.66	
3 3/4	12,035	17.33	
3 7/8	12,486	17.98	
4	12,861	18.52	
4 1/8	13,076	18.83	
4 1/4	13,285	19.13	
4 3/8	13,486	19.42	

Disclaimer:
This sanitary sewer overflow table was developed by Ed Euyen, Civil Engineer, P.E. No. 33955, California, for County Sanitation District 1. This table is provided as an example. Other Agencies may want to develop their own estimating tables.

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The formula used to develop Table B for estimating SSO's out of maintenance holes without covers is based on discharge over curved weir – bell mouth spillways for 2" to 12" diameter pipes. The formula was taken from hydraulics and its application by A.H. Gibson (Constable & Co. Limited).

Example Overflow Estimation:

The maintenance hole cover is off and the flow coming out of a 36" frame maintenance hole at one inch (1") height will be approximately 660 gallons per minute.

FLOW OUT OF M/H WITH COVER REMOVED (TABLE "B")

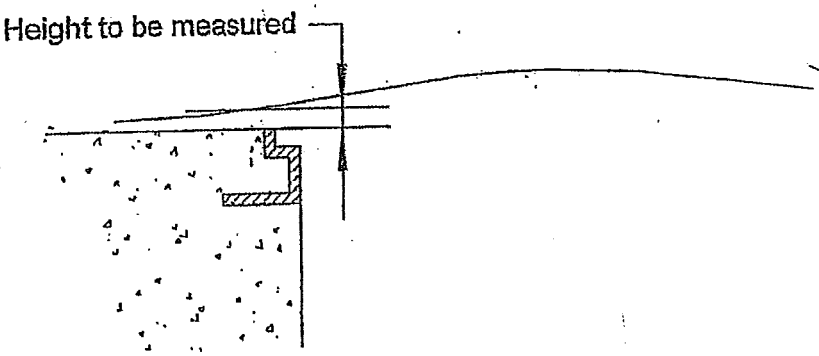

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TABLE 'C'

ESTIMATED SSO FLOW OUT OF M/H PICK HOLE

Height of spout above M/H cover H in inches	SSO FLOW Q in gpm
1/8	1.0
1/4	1.4
3/8	1.7
1/2	1.9
5/8	2.2
3/4	2.4
7/8	2.6
1	2.7
1 1/8	2.9
1 1/4	3.1
1 3/8	3.2
1 1/2	3.4
1 5/8	3.5
1 3/4	3.6
1 7/8	3.7
2	3.9
2 1/8	4.0
2 1/4	4.1
2 3/8	4.2
2 1/2	4.3
2 5/8	4.4
2 3/4	4.5
2 7/8	4.6
3	4.7
3 1/8	4.8
3 1/4	4.9
3 3/8	5.0
3 1/2	5.1
3 5/8	5.2
3 3/4	5.3
3 7/8	5.4
4	5.5
4 1/8	5.6
4 1/4	5.6
4 3/8	5.7
4 1/2	5.8
4 5/8	5.9
4 3/4	6.0
4 7/8	6.0
5	6.1
5 1/8	6.2
5 1/4	6.3
5 3/8	6.3
5 1/2	6.4
5 5/8	6.5
5 3/4	6.6
5 7/8	6.6
6	6.7
6 1/8	6.8
6 1/4	6.8
6 3/8	6.9
6 1/2	7.0
6 5/8	7.0
6 3/4	7.1
6 7/8	7.2
7	7.2
7 1/8	7.3
7 1/4	7.4
7 3/8	7.4
7 1/2	7.5
7 5/8	7.6
7 3/4	7.6
7 7/8	7.7
8	7.7
8 1/8	7.8
8 1/4	7.9
8 3/8	7.9
8 1/2	8.0
8 5/8	8.0
8 3/4	8.1
8 7/8	8.1
9	8.2
9 1/8	8.3
9 1/4	8.3
9 3/8	8.4
9 1/2	8.4
9 5/8	8.5
9 3/4	8.5
9 7/8	8.6
10	8.7

Unrestrained M/H cover will start to lift

Note: This chart is based on a 7/8 inch diameter pick hole

Disclaimer: This sanitary sewer overflow table was developed by Ed Euyen, Civil Engineer, P.E. No. 33955, California, for County Sanitation District 1. This table is provided as an example. Other Agencies may want to develop their own estimating tables.

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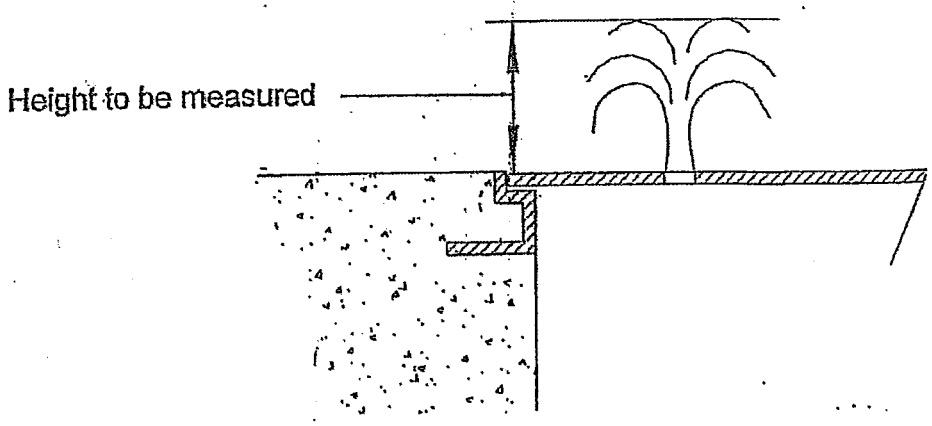
The formula used to develop Table C is Q=CcVA, where Q is equal to the quantity of the flow in gallons per minute, Cc is equal to the coefficient of contraction (.63), V is equal to the velocity of the overflow, and A is equal to the area of the pick hole.[2] If all units are in feet, the quantity will be calculated in cubic feet per second, which when multiplied by 448.8 will give the answer in gallons per minute. (One cubic foot per second is equal to 448.8 gallons per minute, hence this conversion method).

Example Overflow Estimation:

The maintenance hole cover is in place and the height of water coming out of the pick hole seven-eighths of an inch in diameter (7/8") is 3 inches (3"). This will produce an SSO flow of approximately 4.7 gallons per minute.

FLOW OUT OF VENT OR PICK HOLE (TABLE "C")



This sanitary sewer overflow drawing was developed by Debbie Myers, Principal Engineering Technician, for Ed Euyen, Civil Engineer, P.E. No. 33955, California, of County Sanitation District 1.

[2] Velocity for the purposes of this formula is calculated by using the formula h = v squared / 2G, where h is equal to the height of the overflow, v is equal to velocity, and G is equal to the acceleration of gravity.

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CITY OF UKIAH
UKIAH PUBLIC WORKS, WATER/SEWER DIVISION

Sewer Spill Estimation

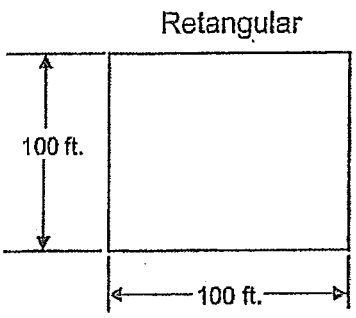
EXAMPLE 1: To calculate the estimated amount of gallons in a ponded sewage spill you must determine the volume of the spill. If it is a rectagular contained area,

Volume = Length x Width x Depth x 7.48 gallons / cu.ft. = gallons

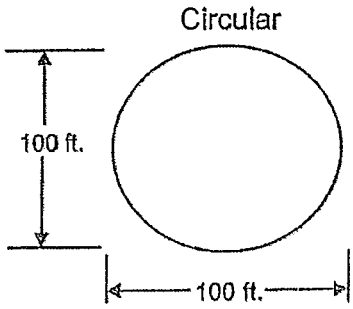
A spill 100 ft. long by 100 ft. wide by 6-inches deep would have a volume of:

100 ft. x 100 ft. x 0.5 ft. x 7.48 gallons / cu.ft. = 37,400 gallons

See illustration below for estimating the volume of a circular ponded area.



Volume = 100 ft. x 100 ft x 0.5 ft. x 7.48
= 37,400 gallons



Volume = 100 ft. x 100 ft x 0.5 ft. x 0.7 x 7.48
= 26,180 gallons

Factor for estimating area of circle as a portion of the area of a square.

EXAMPLE 2: If you are dealing with a spill that has been running into a storm drain, you must estimate the gallons by the amount of time of the overflow times the number of connections on the receiving line (assume 240 gal per household per 24 hrs).

If you have a line with 6 houses on it, and it has been overflowing for 24 hrs:

6 houses x 240 gal/house = 1,440 gal

EXAMPLE 3a: If the overflow is less than 24 hours in duration, then the calculation must prorate the daily sewage generation rate. If you have 60 houses on a line that has been overflowing for 1 hr:

60 houses x 240 gal/day/house x 1 hr x 1day/24hr = 600 gal

EXAMPLE 3b: If you have 6 houses on a line that has been overflowing for 12 hours: 6 houses x 240 gal/day/house x 12 hrs x 1 day/ 24hr = 720 gal

Note that the time of day of the overflow should be considered in the calculation of its volume especially if the land use of the tributary area to the overflow is predominantly residential. Over 90% of the daily sewage discharge from an average home occurs between the hours of 6 am and 12 midnight with 50-75% of the daily sewage discharge occurring between 8 am. to noon and 7 pm to 11 pm ("diurnal peak hours"). This could result in a flow rate of 15 to 22.5gal/hr during the diurnal peak hours vs. 10 gal/hr (average) over 24 hours.

If there is mixed land use tributary to an overflowing sewer, the following unit flow rates should be used in addition to the residential, as appropriate: hotel/motel - 100gpd/room; restaurant - 55 gpd/seat; business offices - 175 gpd/1000 sq. ft.; and, commercial/ retail - 75 gpd/1000 sq. ft.

Wet weather conditions could further affect the per home daily sewage contribution due to I/I sources.

Source: City of Pacifica, California

Measuring Flow in a Storm Sewer to Estimate an SSO Volume/Flow Rate

To determine flow rate and volume of wastewater discharged to a storm sewer, two approaches may be used.

One is the "drop/bucket" method. This method is limited to flow rates of approximately 20 gallons/minute or less, and requires a free discharging storm sewer with adequate space below the pipe invert to position a plastic bucket of known volume (2-5 gallons). As the bucket captures the discharge, a stopwatch is used to time its filling. Dividing the volume of the bucket, in gallons, by the elapsed time to fill the bucket, in minutes, yields the flow rate in gallons/minute.

The second method utilizes a piece of 0.5-inch polyvinyl chloride (PVC) pipe, 3 feet in length and wrapped with fluorescent-colored tape at one foot gradations, and the following procedure:

1. The PVC pipe is lowered from the manhole rim and anchored in the storm sewer manhole's line of flow with an attached 0.5-pound fishing line weight.

2. To determine the velocity of flow, a floatable marker is dropped into the flow at the upstream end of the PVC pipe and its time of travel along the length of the PVC pipe is timed with a stopwatch. Note that the marker should be of a material and size that will not clog any downstream pumps. The PVC pipe's 3 feet in length divided by the elapsed time, in seconds, for the marker to travel that length yields the velocity in feet/second. (The use of electrical or mechanical velocity meters are likely not practical because this method is only for relatively low velocity/low flow scenarios of less than 0.75 feet/second.)

3. The depth of flow is the depth from the water surface to the manhole invert as measured remotely from the manhole rim using a string and a 0.5-pound fishing weight. The string should be white and absorbent so the flow depth is apparent, i.e., the moisture stain on the string, when retrieved.

4. Using the storm sewer pipeline diameter and grade obtained from storm sewer maps, the measured water depth, and flow velocity, the flow rate can be calculated.

Source: City of Riverside, California Wastewater Division

SERP APPENDIX D

SANITARY SEWER OVERFLOW SURVEY

Spill No. _____

Debriefing conducted by: _____

Date completed: _____

Response Procedure Assessment

	Evaluate on a scale of 1 to 5 (1 low, 5 high)
1. Was initial report of spill adequately handled and processed?	1 2 3 4 5
2. Were Maintenance and Operations Supervision Groups promptly notified?	1 2 3 4 5
3. Was spill response crew sent to spill site promptly?	1 2 3 4 5
4. Was the spill response crew properly equipped?	1 2 3 4 5
5. Were spill response equipment and supplies readily available and prepared for use?	1 2 3 4 5
6. Overall timeliness in responding to spill adequate?	1 2 3 4 5
7. Was Initial Report of Spill or Stoppage form adequately completed?	1 2 3 4 5
8. Was staff training and understanding of spill response procedures adequate?	1 2 3 4 5
9. Was PI handled in an appropriate and timely manner?	1 2 3 4 5

Response Procedure Recommendations:

_____

_____

_____

_____

_____

Implementation Schedule:

Recommend immediate implementation. ☐

Recommended schedule. _____

Spill No. _____

Debriefing conducted by: _____

Date completed: _____

Spill Control and Cleanup

	Evaluate on a scale of 1 to 5 (1 low, 5 high)
1. Were response crews adequately staffed and equipped?	1 2 3 4 5
2. Was backup support, if needed, provided promptly?	1 2 3 4 5
3. Were communications between spill response team and Maintenance Supervision Group adequate?	1 2 3 4 5
4. Were spill control methods adequate and appropriate?	1 2 3 4 5
5. Were cleanup methods adequate and appropriate?	1 2 3 4 5
6. Was sampling, if required, completed adequately?	1 2 3 4 5
7. Was signage posting adequate and proper?	1 2 3 4 5
8. Was spill documentation information and forms completed properly?	1 2 3 4 5
9. Was Agency staff training and understanding of procedures and methods adequate?	1 2 3 4 5
10. Was PI kept apprised of activities?	1 2 3 4 5

Spill Control and Cleanup Recommendations:

_____

_____

_____

Implementation Schedule:

Recommend immediate implementation. ☐

Recommended schedule. _____

Spill No. _____

Debriefing conducted by: _____

Date completed: _____

Notification and Reports

Evaluate on a scale of 1 to 5 (1 low, 5 high)

1. Was regulatory notification completed properly?	1	2	3	4	5
2. Was documentation adequate for regulatory notification and reporting?	1	2	3	4	5
3. Was documentation accurate and complete?	1	2	3	4	5
4. Were compliance reports to regulatory agencies complete and on time?	1	2	3	4	5
5. Were spill followup investigations adequate?	1	2	3	4	5
6. Were notification requirements understood and followed?	1	2	3	4	5
7. Was staff training on regulatory notification and reporting adequate?	1	2	3	4	5
8. Was Agency management notification adequate and appropriate?	1	2	3	4	5

Notification and Report Recommendations:

_____

_____

_____

Implementation Schedule:

Recommend immediate implementation. ☐

Recommended schedule. _____

Spill No. _____

Debriefing conducted by: _____

Date completed: _____

Public Notification and Information

Evaluate on a scale of 1 to 5 (1 low, 5 high)

1. Was spill information adequately provided to Agency public information office? | 1 | 2 | 3 | 4 | 5 |

2. Was public and media notification handled in a appropriate and timely manner? | 1 | 2 | 3 | 4 | 5 |

3. Was Agency public information regularly appraised on status of activities? | 1 | 2 | 3 | 4 | 5 |

4. Was staff adequately prepared for handling and processing public information and notification requirements? | 1 | 2 | 3 | 4 | 5 |

Public Notification and Information Recommendations:

_____

_____

_____

Implementation Schedule:

Recommend immediate implementation. ☐

Recommended schedule. _____

SERP APPENDIX E

SSO REGULATORY AGENCIES NOTIFICATION REQUIREMENTS

Spill Notification Contact Information

(Outside Agencies)

CA Office of Emergency Services (OES):

1. State	1-800-852-7550
2. Sacramento Office	916- 845-8510

Mendocino County Environmental Health (County):

1. Water System Violations	707-463-4466 (24-hrs.)
2. Hazardous Materials Spills	707-463-4086
3. Dave Jensen	707-234-6636
4. FAX	707-463-4038

RWQCB:

1. Office	707-576-2220
2. Mona Dougherty	707-570-3761
3. Cathy Goodwin	707-576-2687
4. FAX	707-523-0135
5. Pager	707-323-4945 (after hours)

CA Dept. of Fish and Wildlife:

1. Office	530-225-2300
2. Sacramento Office	916- 445-0411

CA Dept. of Health Services:

1. Office	707-576-2145
2. Michelle Frederick	707-576-2731

National Marine Fisheries Services:

1. Office	707-575-6050

US Environmental Protection Agency:

1. Sacramento Office	916-323-2514

NOTE:
-The City is required to call OES within 2 hours of spills where 1,000 gallons or more reach Surface Water. All other agencies will be notified by OES.

CITY OF UKIAH
UKIAH PUBLIC WORKS, WATER/SEWER DIVISION

AGENCY NOTIFICATION REQUIREMENTS

Agency	Event	Verbal Notification	Written Notification	Spill Response Procedure	Contact Information
State of California	Category 1 SSOs where 1,000 gallons or more reach Surface Waters	Call OES 1-800-852-7550 immediately (within 2-hr). Provide: 1. Name 2. Agency 3. Phone number 4. Date & time of occurrence 5. Location 6. Est. Volume & rate of flow 7. Duration 8. Surface water bodies impacted 9. Responding Agencies 10. Cause of spill 11. Cleanup actions or repairs made Obtain OES Notification Control Number	1 - Submit online draft report within 3 business days by using CIWQS website 2 - Certify online report within 15 calendar days. Provide: 1. Reasons for discharge 2. Duration and volume of discharge 3. Steps taken to correct problem 4. Steps taken to prevent problem from recurring 5. Other agencies notified of event	Determined on a case by case basis using best professional judgment. Refer to SSORP-Appendix B: Investigate chart to determine SSO causes, corrective actions and preventive measures.	OES 1-800-852-7550 CIWQS: www.waterboards.ca.gov/ciwqs/
	Category 1 SSOs where less than 1,000 gallons reached surface waters and all Category 2 SSOs	No immediate notification required.	1. Submit online report within 3 business days by using CIWQS website 2 - Certify online report within 15 calendar days	Refer to SSORP-Appendix B: Investigate chart to determine SSO causes, corrective actions and preventive measures.	
	Category 3 SSOs	No verbal notification required.	Submit online report within 30 days after end of calendar month by using CIWQS website	Refer to SSORP-Appendix B: Investigate chart to determine SSO causes, corrective actions and preventive measures.	
	No SSOs in Month	No verbal notification required.	Submit online report within 30 days past the end of the month by using CIWQS website.		

CITY OF UKIAH
UKIAH PUBLIC WORKS, WATER/SEWER DIVISION

AGENCY NOTIFICATION REQUIREMENTS

References Websites:

1. State Water Resources Control Board Website, www.swrcb.ca.gov
2. North Coast RWQCB Website, www.swrcb.ca.gov
3. California Office of Emergency Services Website, www.Oes.ca.gov
4. California Department of Health Services Website, www.dhs.cahwnel.gov
5. US Environmental Protection Agency Website, www.epa.gov
6. US Fish & Wildlife Service Website, www.fws.gov; pacific.fws.gov
7. National Marine Fisheries Service Website, www.nmfs.gov

SERP APPENDIX F

SAMPLE WARNING SIGNS

WARNING!

RAW SEWAGE SPILL

AREA CLOSED

Please Keep Children and Pets Out of Area

City of Ukiah, Public Information Office
707-463-6287

KEEP OUT

WARNING!

CONTAMINATED WATER

Mendocino County Environmental Health
and
City of Ukiah

Agenda Item No: 13.b.

MEETING DATE/TIME: 9/3/2025

ITEM NO: 2025-978

City of Ukiah

AGENDA SUMMARY REPORT

SUBJECT: Possible Adoption of Urgency Ordinance Adopting FEMA's Model Floodplain Management Ordinance, Flood Insurance Study, and Flood Insurance Rate Maps.

DEPARTMENT: City Attorney **PREPARED BY:**

PRESENTER: Darcy Vaughn, Assistant City Attorney

ATTACHMENTS:

1. Floodplain Management Urgency Ordinance
2. 13b Floodplain Management Ordinance FEMA - Updated

Summary: The City Council for the City of Ukiah will consider adopting the Urgency Ordinance Adopting FEMA's Model Floodplain Management Ordinance, Flood Insurance Study, and Flood Insurance Rate Maps, which will go into effect immediately after adoption.

Background: Since 2020, the City has been in communication with Federal Emergency Management Agency (FEMA) Regional Office regarding updated flood insurance rate maps (FIRM) and a Flood Insurance Study (FIS) report for Mendocino County and the City of Ukiah. On or about August 13, 2025, the City's Public Works Department received a letter from the FEMA Regional Office stating that the City has until September 19, 2025, to approve via ordinance floodplain management regulations that satisfy 44 Code of Federal Regulations (CFR) § 60.3(d) of the National Flood Insurance Program (NFIP) regulations to avoid suspension from the NFIP. The National Flood Insurance Act was enacted to provide previously unavailable flood insurance protection to property owners in flood-prone areas. Under the Act and the regulations promulgated under the Act, specifically 44 CFR § 59.2, in order to qualify for the sale of federally-subsidized flood insurance, the City must adopt and submit to FEMA an ordinance adopting flood plain management regulations ("Ordinance") that satisfy the requirements of 44 CFR § 60.3 and that are designed to reduce or avoid future flood, mudslide or flood-related erosion damages and include enforcement provisions.

The City did at one point adopt floodplain management regulations, which were set forth in Division 9, Chapter 6 of the City Code. However, these were repealed in 2011. While the City has adopted the most recent version of Appendix G of the California Building Code, which sets forth certain minimum floodplain management standards, the City does not currently have in effect floodplain management regulations that satisfy the prerequisites for the NFIP or the regulations for the NFIP set forth at 44 CFR Part 60. Pursuant to 44 CFR § 59.24, a government entity that is otherwise eligible for the sale of federal flood insurance shall be subject to suspension from the NFIP for failing to submit copies of adequate flood plain management regulations meeting the minimum requirements of 4 CFR Part 60.

Discussion: SUMMARY OF ORDINANCE

The Floodplain Management Urgency Ordinance (Attachment 1) adopts by reference all areas of special flood hazard identified by the Federal Insurance Administration (FIA) of the Federal Emergency Management Agency (FEMA) in the Flood Insurance Study (FIS) for Mendocino County accompanying Flood Insurance Rate Maps (FIRMs) and Flood Boundary and Floodway Maps (FBFMs) and states that the FIS, FIRMs and FBFMs will be available for review at the Civic Center.

The Ordinance designates the City Engineer as the Floodplain Administrator, the official charged with

administration and enforcement, or delegation of both, of the floodplain management regulations, contained in the Ordinance. More specific duties include reviewing all permit applications to determine whether proposed development is located in flood hazard areas and granting or denying all permits in these areas based on the floodplain management regulations, requiring that development in flood hazard areas to be reasonably safe from flooding and to be designed and constructed with methods, practices and materials that minimize flood damage, interpreting flood hazard area boundaries and provide available flood elevation and flood hazard information, and reviewing all applications and plans for development in flood hazard areas for compliance with the floodplain management regulations. An applicant may be required to submit additional engineering data, such as additional hydrologic, hydraulic or other engineering data, studies. If so, the applicant has the right to seek a Letter of Map Change from FEMA to change the base flood elevations, change floodway boundaries, or change boundaries of flood hazard areas shown on FIRMs, and to submit such data to FEMA for such purposes.

The Ordinance imposes additional requirements on development permit applicants seeking to undertake development projects in flood hazard areas. Site plans for such projects require the applicant to show additional information such as the location of the proposed activity and proposed structures; locations of water supply, sanitary sewer, and other utilities; locations of existing buildings and structures, and the location, extent, amount, and proposed final grades of any filling, grading, or excavation.

The Ordinance sets forth requirements for issuance of a variance, which the City is authorized to issue for floodplain management purposes only. While these are primarily set forth in Appendix G, the Ordinance includes criteria for issuance of a variance for construction or substantial improvement of agricultural structures that are not elevated or dry floodproofed.

The Ordinance establishes a number of requirements for flood resistant development, such as limitations on placement of fill, requirements for installation of mobile home parks, for development of detached garages and other accessory structures generally, and for flood control projects.

Finally, the Ordinance contains enforcement provisions that allow the City to determine when there has been a violation of the Ordinance and what penalties will apply. The Ordinance states that violations of its provisions constitute a misdemeanor.

The Ordinance requires review from both FEMA and the NFIP division of the California Department of Water Resources prior to adoption. This review is still pending.

URGENCY ORDINANCE FINDINGS

The Ordinance is being adopted as an urgency ordinance due to the fact that Ukiah's continued participation in the National Flood Insurance Program requires the City to, prior to September 19, 2025, adopt a current Floodplain Management Ordinance that complies with FEMA's requirements and that adopts FEMA's Flood Insurance Study and Flood Insurance Rate Maps for the City. The impending loss of community eligibility for flood insurance under the National Flood Insurance Program poses a current and immediate threat to the public health, safety, and welfare presented by catastrophic floods and related conditions during the upcoming rainy season. In the absence of this Ordinance's immediate effectiveness, the City would be unable to secure eligibility to purchase federal flood insurance to affected community members, as well as to protect public health, safety, and welfare from the potential adverse effects of lack of insurance coverage to recover from a flood or flood-related disaster. Furthermore, and of utmost concern, is the fact that Ukiah residents that currently have federal flood insurance coverage would lose that coverage if FEMA suspends the City's participation in NFIP.

Ordinances may take effect immediately when adopted for the “immediate preservation of the public peace, health or safety[.]” (Gov Code, § 36937(b).) When enacted on an urgency basis, the ordinance must contain a statement of facts justifying the urgency. (Id.) Although courts may not investigate the truth of these facts, the mere declaration that an ordinance is passed for the immediate preservation of public peace, health, or safety is insufficient to withstand challenge. (Crown Motors v. City of Redding (1991) 232 Cal.App.3d 173,

179.)

If the Council adopts the Ordinance, it will go into effect immediately. Having reviewed the Ordinance prior to this meeting, FEMA personnel have indicated that the draft Ordinance complies with 44 CFR Part 60 and that the City's eligibility for the sale of flood insurance under the National Flood Insurance Act will not be suspended if the Ordinance goes into effect prior to September 19, 2025.

Recommended Action: Adopt the Urgency Ordinance Adopting FEMA's Model Floodplain Management Ordinance, Flood Insurance Study, and Flood Insurance Rate Maps

BUDGET AMENDMENT REQUIRED: N/A

CURRENT BUDGET AMOUNT: N/A

PROPOSED BUDGET AMOUNT: N/A

FINANCING SOURCE: N/A

REVENUE: Yes / No GRANT: Yes / No

PREVIOUS CONTRACT/PURCHASE ORDER NO.:N/A

COORDINATED WITH: Public Works

STRATEGIC PLAN (SP):N/A

CLIMATE INITIATIVES (CI):N/A

GENERAL PLAN ELEMENTS (GP):N/A

Approved:
Sage Sangiacomo, City Manager

ORDINANCE NO.

URGENCY ORDINANCE OF THE CITY COUNCIL OF THE CITY OF UKIAH AMENDING VARIOUS SECTIONS OF THE UKIAH CITY CODE TO RE-ADOPT THE MOST RECENT CALIFORNIA BUILDING STANDARDS CODE PROVISIONS REGARDING FLOODPLAN MANAGEMENT; TO ADOPT FLOOD HAZARD MAPS; TO DESIGNATE A FLOODPLAIN ADMINISTRATOR; AND TO ADOPT ADDITIONAL FLOODPLAIN MANAGEMENT REGULATIONS.

The City Council of the City of Ukiah hereby ordains as follows:

SECTION ONE. FINDINGS

WHEREAS, the Legislature of the State of California has, in Government Code Sections 65302, 65560, and 65800, conferred upon local governments the authority to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry

WHEREAS, the Federal Emergency Management Agency has identified special flood hazard areas within the boundaries of the City of Ukiah and such areas may be subject to periodic inundation which may result in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety and general welfare, and

WHEREAS, the City of Ukiah was accepted for participation in the National Flood Insurance Program on July 19, 1982 and the City Council of the City of Ukiah desires to continue to meet the requirements of Title 44 Code of Federal Regulations, Sections 59 and 60, necessary for such participation; and

WHEREAS, pursuant to the California Health and Safety Code, Division 13, Part 1.5 and Part 2.5, the City of Ukiah is required to administer and enforce the California Building Standards Code, and such building codes contain certain provisions that apply to the design and construction of buildings and structures in flood hazard areas; and

WHEREAS, the City Council of the City of Ukiah has determined that it is in the public interest to adopt the proposed floodplain management regulations that are coordinated with the California Building Standards Code.

NOW, THEREFORE, BE IT ORDAINED by the City Council of the City of Ukiah that the following floodplain management regulations are hereby adopted.

SECTION TWO.

A new Article 1, entitled SCOPE AND ADMINISTRATION, is added to Division 9, Chapter 6, entitled FLOOD PLAIN MANAGEMENT, of the Ukiah City Code and shall read as follows:

§ 9600 TITLE

The regulations set forth in this Chapter, in combination with the flood provisions of California Code of Regulations Title 24, the California Building Standards Code (hereinafter "Building Codes," consisting of the Part 2 (building) and Part 2 Appendix G (hereinafter "Appendix G"), Part 2.5 (residential), and Part 10 (existing building), shall be known as the Floodplain Management Regulations of the City of Ukiah (hereinafter "these Regulations").

§ 9601 STATUTORY AUTHORITY

The Legislature of the State of California has, in Government Code Sections 65302, 65560, and 65800, conferred upon local governments the authority to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry.

§ 9602 SCOPE

These Regulations, in combination with the flood provisions of the Building Codes shall apply to all proposed development in flood hazard areas established in Section 9616 of these Regulations

§ 9603 PURPOSES AND OBJECTIVES

The purposes and objectives of these Regulations and the flood load and flood resistant construction requirements of the building codes are to promote the public health, safety and general welfare and to minimize public and private losses due to flood conditions in specific flood hazard areas through the establishment of comprehensive regulations for management of flood hazard areas, designed to:

A. Prevent unnecessary disruption of commerce, access and public service during times of flooding.
B. Manage the alteration of natural floodplains, stream channels and shorelines;
C. Manage filling, grading, dredging and other development which may increase flood damage or erosion potential.
D. Prevent or regulate the construction of flood barriers which will divert floodwater or increase flood hazards.
E. Contribute to improved construction techniques in the floodplain.
F. Minimize damage to public and private facilities and utilities.
G. Help maintain a stable tax base by providing for the sound use and development of flood hazard areas.
H. Minimize the need for rescue and relief efforts associated with flooding.
I. Ensure that property owners, occupants, and potential owners are aware of property located in flood hazard areas.
J. Minimize the need for future expenditure of public funds for flood control projects and response to and recovery from flood events.
K. Meet the requirements of the National Flood Insurance Program for community participation set forth in Title 44 Code of Federal Regulations, Section 59.22.

§ 9604 COORDINATION WITH BUILDING CODE

Pursuant to the requirement established in State statute that the City of Ukiah administer and enforce the State building codes, the City Council of the City of Ukiah does hereby acknowledge that the building codes contain certain provisions that apply to the design and construction of buildings and

structures in flood hazard areas. Therefore, these Regulations are intended to be administered and enforced in conjunction with the Building Codes.

§ 9605 ADOPTION OF CCR TITLE 24 PART 2 APPENDIX G.

As provided in Sections 3000 and 3002 of this Code, the version of CCR Title 24 Part 2 Appendix G Flood-Resistant Construction most recently adopted by the State of California is hereby adopted and made a part of the California Building Standards Code and shall apply in flood hazard areas.

§ 9606 WARNING

The degree of flood protection required by these Regulations and the Building Codes is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur. Flood heights may be increased by man-made or natural causes. Enforcement of these Regulations and the building codes does not imply that land outside the special flood hazard areas, or that uses permitted within such flood hazard areas, will be free from flooding or flood damage. The flood hazard areas and base flood elevations contained in the Flood Insurance Study and shown on Flood Insurance Rate Maps and the requirements of Title 44 Code of Federal Regulations, Sections 59 and 60 may be revised by the Federal Emergency Management Agency, requiring this community to revise these Regulations to remain eligible for participation in the National Flood Insurance Program. No guaranty of vested use, existing use, or future use is implied or expressed by compliance with these Regulations.

§ 9607 DISCLAIMER OF LIABILITY

These Regulations shall not create liability on the part of the City Council of the City of Ukiah, any officer or employee thereof, the State of California, or the Federal Emergency Management Agency, for any flood damage that results from reliance on these Regulations or any administrative decision lawfully made hereunder. The Floodplain Administrator and any employee charged with the enforcement of these Regulations, while acting for the community in good faith and without malice in the discharge of the duties required by these Regulations or other pertinent law or ordinance, shall not thereby be rendered liable personally and is hereby relieved from personal liability for any damage accruing to persons or property as a result of any act or by reason of an act or omission in the discharge of official duties. Any suit instituted against an officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of these Regulations shall be defended by a legal representative of the community until the final termination of the proceedings. The Floodplain Administrator and any subordinate shall not be liable for cost in any action, suit or proceeding that is instituted in pursuance of the provisions of these Regulations.

§ 9608 OTHER LAWS

The provisions of these Regulations shall not be deemed to nullify any provisions of local, State or federal law.

§ 9609 ABROGATION AND GREATER RESTRICTIONS

These Regulations supersede any ordinance in effect in flood hazard areas. However, these Regulations are not intended to repeal or abrogate any existing ordinances including land development regulations, subdivision regulations, zoning ordinances, stormwater management regulations, or Building Codes. In the event of a conflict between these Regulations and any other ordinance, code, or regulation, the more restrictive shall govern.

SECTION THREE.

A new Article 2, entitled APPLICABILITY, is added to Division 9, Chapter 6, entitled FLOOD PLAIN MANAGEMENT, of the Ukiah City Code and shall read as follows:

§ 9615 GENERAL APPLICABILITY

These Regulations, in conjunction with the Building Codes, provide minimum requirements for development located in flood hazard areas, including the subdivision of land and other developments; site improvements and installation of utilities; placement and replacement of manufactured homes; placement of recreational vehicles; new construction and alterations, repair, reconstruction, rehabilitation or additions of existing buildings and structures; substantial improvement of existing buildings and structures, including repair of substantial damage; installation of tanks; temporary structures and temporary or permanent storage; utility and miscellaneous Group U buildings and structures; and certain building work exempt from permit under the building codes; and other buildings and development activities.

§ 9616 ESTABLISHMENT OF FLOOD HAZARD AREAS

The Flood Insurance Study for Mendocino, California and Incorporated Areas dated July 19, 1982 and all subsequent amendments and revisions, and the accompanying Flood Insurance Rate Maps (FIRM), and all subsequent amendments and revisions to such maps, are hereby adopted by reference as a part of these Regulations and serve as the basis for establishing flood hazard areas. Where the Building Code establishes flood hazard areas, such areas are established by this Section. Additional maps and studies, when specifically adopted, supplement the FIS and FIRMs to establish additional flood hazard areas. Maps and studies that establish flood hazard areas are on file at the City of Ukiah Civic Center, City Engineer's Office, located at 300 Seminary Ave, Ukiah, CA 95482.

§ 9617 INTERPRETATION

In the interpretation and application of these Regulations, all provisions shall be:

A. Considered as minimum requirements.
B. Liberally construed in favor of the governing body.
C. Deemed neither to limit nor repeal any other powers granted under state statutes.

SECTION FOUR.

A new Article 3, entitled DUTIES AND POWERS OF THE FLOODPLAIN ADMINISTRATOR, is added to Division 9, Chapter 6, entitled FLOOD PLAIN MANAGEMENT, of the Ukiah City Code and shall read as follows:

§ 9620 DESIGNATION

The City Engineer is designated the Floodplain Administrator. The Floodplain Administrator shall have the authority to delegate performance of certain duties to other employees. Where Appendix G refers to the City Engineer, each such reference shall refer to the Floodplain Administrator. The Floodplain Administrator is authorized and directed to administer and enforce the provisions of Appendix G.

§ 9621 GENERAL AUTHORITY

The Floodplain Administrator is authorized and directed to administer the provisions of these Regulations. The Floodplain Administrator shall have the authority to render interpretations of these Regulations consistent with the intent and purpose of these Regulations and to establish policies and procedures in order to clarify the application of its provisions. Such interpretations, policies and procedures shall be consistent with the intent and purpose of these Regulations and the flood provisions of the building code and shall not have the effect of waiving specific requirements without the granting of a variance pursuant to Appendix G.

§ 9622 COORDINATION

The Floodplain Administrator shall coordinate with and provide comments to the Building Official to administer and enforce the flood provisions of the building code and to ensure compliance with the applicable provisions of these Regulations. The Floodplain Administrator and the Building Official have the authority to establish written procedures for reviewing applications and conducting inspections for buildings and for administering and documenting determinations of substantial improvement and substantial damage made pursuant to Section 9625 of these Regulations.

§ 9623 DUTIES

The duties of the Floodplain Administrator shall include but are not limited to:

A. Review all permit applications to determine whether proposed development is located in flood hazard areas established in Section 9616 of these Regulations.
B. Require development in flood hazard areas to be reasonably safe from flooding and to be designed and constructed with methods, practices and materials that minimize flood damage.
C. Interpret flood hazard area boundaries, provide available flood elevation and flood hazard information.
D. Determine whether additional flood hazard data shall be obtained or developed.
E. Review all applications and plans for development in flood hazard areas for compliance with these Regulations.
F. Complete the appropriate section of the Department of Housing and Community Development Floodplain Ordinance Compliance Certification for Manufactured Home/Mobile home Installations when submitted by applicants.
G. Review, in conjunction with the Building Official, required certifications and documentation specified by these Regulations and the building code to determine that such certifications and documentations are complete.

H. Establish, in coordination with the Building Official, written procedures for administering and documenting determinations of substantial improvement and substantial damage made pursuant to Section 9625 of these Regulations.
I. Coordinate with the Building Official and others to identify and investigate damaged buildings located in flood hazard areas and inform owners of the requirement to obtain permits for repairs.
J. Review requests submitted to the Building Official seeking approval to modify the strict application of the flood load and flood resistant construction requirements of the building code, to determine whether such requests require consideration as a variance pursuant to Appendix G.
K. Require applicants who submit hydrologic and hydraulic engineering analyses to support permit applications to submit to FEMA the data and information necessary to maintain the Flood Insurance Rate Maps when the analyses propose to change base flood elevations, flood hazard area boundaries, or floodway designations; such submissions shall be made within 6 months of such data becoming available.
L. Require applicants who propose alteration of a watercourse to notify adjacent jurisdictions and the NFIP State Coordinating Agency, and to submit copies of such notifications to the Federal Emergency Management Agency (FEMA).
M. Inspect development within the scope of Appendix G and inspect flood hazard areas to determine if development is undertaken without issuance of permits.
N. Prepare comments and recommendations for consideration when applicants seek variances in accordance with Appendix G.
O. Cite violations.
P. Notify the Federal Emergency Management Agency when the corporate boundaries of {name of community} have been modified.

§ 9624 OTHER PERMITS REQUIRED

The applicant shall obtain all other required state and federal permits prior to initiating work authorized by these Regulations and shall provide documentation of such permits to the Floodplain Administrator. Examples of such permits include but are not limited to:

A. California Coastal Commission or certified Local Coastal Program, if applicable, for activities subject to the Coastal Development Permit requirements and policies of the California Coastal Act (Public Resources Code, Division 20).
B. California State Water Resources Control Board for activities that affect wetlands and alter surface water flows, in conjunction with the U.S. Army Corps of Engineers; Section 404 of the Clean Water Act.

§ 9625 SUBSTANTIAL IMPROVEMENT AND SUBSTANTIAL DAMAGE DETERMINATIONS

For applications for building permits to improve buildings and structures, including alterations, movement, repair, additions, rehabilitations, renovations, substantial improvements, repairs of substantial damage, and any other improvement of or work on such buildings and structures, the Floodplain Administrator, in coordination with the Building Official, shall:

A. Estimate the market value, or require the applicant to obtain a professional appraisal prepared by a qualified independent appraiser, of the market value of the building or structure before the start of construction of the proposed work; in the case of repair, the market value of the

building or structure shall be the market value before the damage occurred and before any repairs are made.

B. Compare the cost to perform the improvement, the cost to repair the damaged building to its pre-damaged condition, or the combined costs of improvements and repairs, where applicable, to the market value of the building or structure.
C. Determine and document whether the proposed work constitutes substantial improvement or repair of substantial damage.
D. Notify the applicant when it is determined that the work constitutes substantial improvement or repair of substantial damage and that compliance with the flood resistant construction requirements of the building code is required and notify the applicant when it is determined that work does not constitute substantial improvement or repair of substantial damage.

§ 9626 DEPARTMENT RECORDS

In addition to the requirements of the Building Code and Appendix G, and regardless of any limitation on the period required for retention of public records, the Floodplain Administrator shall maintain and permanently keep and make available for public inspection all records that are necessary for the administration of these Regulations and the flood provisions of the building codes, including Flood Insurance Studies, Flood Insurance Rate Maps; documents from FEMA that amend or revise FIRMs; records of issuance of permits and denial of permits; determinations of whether proposed work constitutes substantial improvement or repair of substantial damage; required certifications and documentation specified by the building codes and these Regulations; notifications to adjacent communities, FEMA, and the State related to alterations of watercourses; assurance that the flood carrying capacity of altered waterways will be maintained; documentation related to variances, including justification for issuance or denial; and records of enforcement actions taken pursuant to these Regulations and the flood resistant provisions of the building codes.

SECTION FIVE.

A new Article 4, entitled SITE PLANS AND DOCUMENTATION, is added to Division 9, Chapter 6, entitled FLOOD PLAIN MANAGEMENT, of the Ukiah City Code and shall read as follows:

§ 9630 ADDITIONAL SITE PLAN INFORMATION

In addition to the site plan requirements of the Building Code and Appendix G shall include, as applicable to the proposed development:

A. Location of the proposed activity and proposed structures; locations of water supply, sanitary sewer, and other utilities; and locations of existing buildings and structures.
B. Location, extent, amount, and proposed final grades of any filling, grading, or excavation.
C. Where the placement of fill is proposed, the amount, type, and source of fill material; compaction specifications; a description of the intended purpose of the fill areas; and evidence that the proposed fill areas are the minimum necessary to achieve the intended purpose.
D. Extent of any proposed alteration of sand dunes, provided such alteration is approved by the California Coastal Commission or certified Local Coastal Program, if applicable.
E. Existing and proposed alignment of any proposed alteration of a watercourse.

§ 9631 ADDITIONAL ENGINEERING DATA

When additional hydrologic, hydraulic or other engineering data, studies, and additional data and analyses are submitted to support an application, the applicant has the right to seek a Letter of Map Change from FEMA to change the base flood elevations, change floodway boundaries, or change boundaries of flood hazard areas shown on FIRMs, and to submit such data to FEMA for such purposes. The analyses shall be prepared by a qualified registered professional engineer in a format required by FEMA. Submittal requirements and processing fees shall be the responsibility of the applicant. Provided FEMA issues a Conditional Letter of Map Revision, construction of proposed flood control projects and land preparation for development are permitted, including clearing, excavation, grading, and filling. Permits for construction of buildings shall not be issued until the applicant satisfies the FEMA requirements for issuance of a Letter of Map Revision.

SECTION SIX.

A new Article 5, entitled VARIANCES, is added to Division 9, Chapter 6, entitled FLOOD PLAIN MANAGEMENT, of the Ukiah City Code and shall read as follows:

§ 9635 VARIANCES, IN ADDITION

In addition to the variance provisions of Appendix G:

A. The considerations and conditions for variances set forth in Appendix G are based on the general principle of zoning law that variances pertain to a piece of property and are not personal in nature. A variance may be issued for a parcel of property with physical characteristics so unusual that complying with the requirements of these Regulations would create an exceptional hardship to the applicant or the surrounding property owners. The characteristics must be unique to the property and not be shared by adjacent parcels. The unique characteristic must pertain to the land itself, not to the structure, its inhabitants, or the property owners. The issuance of a variance is for floodplain management purposes only. Federal flood insurance premium rates are determined by the National Flood Insurance Program according to actuarial risk and will not be modified by the granting of a variance.
B. It is the duty of the City Council of the City of Ukiah to promote public health, safety and welfare and minimize losses from flooding. This duty is so compelling and the implications of property damage and the cost of insuring a structure built below flood level are so serious that variances from the elevation or other requirements in the building codes should be quite rare. The long-term goal of preventing and reducing flood loss and damage, and minimizing recovery costs, inconvenience, danger, and suffering, can only be met when variances are strictly limited. Therefore, the variance requirements in these Regulations are detailed and contain multiple provisions that must be met before a variance can be properly issued. The criteria are designed to screen out those situations in which alternatives other than a variance are more appropriate.

§ 9636 AGRICULTURAL STRUCTURES

A variance is authorized to be issued for the construction or substantial improvement of agricultural structures that are not elevated or dry floodproofed, provided the requirements of this Article are satisfied and:

A. A determination has been made that the proposed agricultural structure:

1. Is used exclusively in connection with the production, harvesting, storage, raising, or drying of agricultural commodities and livestock, or storage of tools or equipment used in connection with these purposes or uses, and will be restricted to such exclusive uses.
2. Has low damage potential.
3. Does not increase risks and pose a danger to public health, safety, and welfare if flooded and contents are released, including but not limited to the effects of flooding on manure storage, livestock confinement operations, liquified natural gas terminals, and production and storage of highly volatile, toxic, or water-reactive materials.
4. Complies with the wet floodproofing construction requirements of paragraph B, below.

B. Wet floodproofing construction requirements.

1. Anchored to resist flotation, collapse, and lateral movement.
2. When enclosed by walls, walls have flood openings that comply with the flood opening requirements of ASCE 24, Chapter 2.
3. Flood damage-resistant materials are used below the base flood elevation.
4. Mechanical, electrical, and utility equipment are elevated above the base flood elevation.

SECTION SEVEN.

A new Article 6, entitled VIOLATIONS, is added to Division 9, Chapter 6, entitled FLOOD PLAIN MANAGEMENT, of the Ukiah City Code and shall read as follows:

§ 9640 VIOLATIONS, GENERAL

In addition to the violation provisions of the Building Code and Appendix G, any development requiring a permit from the City in any flood hazard area that is being performed without an issued permit or that is in conflict with an issued permit shall be deemed a violation.

§ 9641 BUILDINGS AND STRUCTURES

A building or structure without the documentation of the elevation of the lowest floor, other required design certifications, or other evidence of compliance required by these Regulations or the Building Code, is presumed to be a violation until such time as required documentation is submitted. Violation of the requirements shall constitute a misdemeanor.

§ 9642 AUTHORITY

The Floodplain Administrator is authorized to serve notices of violation or stop work orders to owners of property involved, to the owner's agent, or to the person or persons doing the work for development that is not within the scope of the building codes, but is regulated by these Regulations and that is determined to be a violation.

§ 9643 UNLAWFUL CONTINUANCE

Any person who shall continue any work after having been served with a notice of violation or a stop work order, except such work as that person is directed to perform to remove or remedy a violation or unsafe condition, shall be subject to penalties as prescribed by federal, state, or local law.

SECTION EIGHT.

A new Article 7, entitled DEFINITIONS, is added to Division 9, Chapter 6, entitled FLOOD PLAIN MANAGEMENT, of the Ukiah City Code and shall read as follows:

§ 9645 GENERAL

The following words and terms shall, for the purposes of these Regulations, have the meanings shown herein. Other terms are defined in the Building Code and Appendix G and terms are defined where used in the Residential Code (rather than in the Definitions section). Where terms are not defined, such terms shall have ordinarily accepted meanings such as the context implies.

§ 9646 DEFINITIONS

ACCESSORY STRUCTURE. A structure on the same parcel of property as a principal structure and the use of which is incidental to the use of the principal structure. For floodplain management purposes, the term includes only accessory structures used for parking and storage.

AGRICULTURAL STRUCTURE. A walled and roofed structure used exclusively for agricultural purposes or uses in connection with the production, harvesting, storage, raising, or drying of agricultural commodities and livestock, including aquatic organisms. Structures that house tools or equipment used in connection with these purposes or uses are also considered to have agricultural purposes or uses.

ALTERATION OF A WATERCOURSE. A dam, impoundment, channel relocation, change in channel alignment, channelization, or change in cross-sectional area of the channel or the channel capacity, or any other form of modification which may alter, impede, retard or change the direction and/or velocity of the riverine flow of water during conditions of the base flood.

DEVELOPMENT. Any manmade change to improved or unimproved real estate, including but not limited to, buildings or other structures, tanks, temporary structures, temporary or permanent storage of materials, mining, dredging, filling, grading, paving, excavations, drilling operations and other land-disturbing activities.

ENCROACHMENT. The placement of fill, excavation, buildings, permanent structures or other development into a flood hazard area which may impede or alter the flow capacity of riverine flood hazard areas.

EXCEPTIONAL HARDSHIP. For the purpose of variances from these Regulations or the building code, the exceptional difficulty that would result from a failure to grant a requested variance. Mere economic or financial hardship is not exceptional. Inconvenience, aesthetic considerations, physical handicaps, personal preferences, or the disapproval of one's neighbors do not, as a rule, qualify as exceptional hardships. All of these circumstances can be resolved through other means without granting variances, even when the alternatives are more expensive or require the property owner to build elsewhere or put the parcel to a different use than originally intended.

EXISTING MANUFACTURED HOME PARK OR SUBDIVISION. A manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) was completed before September 3, 2025.

EXPANSION TO AN EXISTING MANUFACTURED HOME PARK OR SUBDIVISION. The preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

FLOOD CONTROL PROJECT. A dam or barrier design and constructed to keep water away from or out of a specified area, including but not limited to levees, floodwalls, and channelization.

FRAUD OR VICTIMIZATION. For the purpose of variances from these Regulations or the building code, the intentional use of deceit to deprive another of rights or property, making a victim of the deprived person or the public. As it pertains to buildings granted variances to be constructed below the elevation required by the building code, future owners or tenants of such buildings and the community as a whole may bear the burden of increased risk of damage from floods, increased cost of flood insurance, and increased recovery costs, inconvenience, danger, and suffering.

LETTER OF MAP CHANGE (LOMC). An official determination issued by FEMA that amends or revises an effective Flood Insurance Rate Map or Flood Insurance Study. Letters of Map Change include:

(1) Letter of Map Amendment (LOMA): An amendment based on technical data showing that a property was incorrectly included in a designated special flood hazard area. A LOMA amends the current effective Flood Insurance Rate Map and establishes that a specific property, portion of a property, or structure is not located in a special flood hazard area.
(2) Letter of Map Revision (LOMR): A revision based on technical data that may show changes to flood zones, flood elevations, special flood hazard area boundaries and floodway delineations, and other planimetric features.
(3) Letter of Map Revision Based on Fill (LOMR-F): A determination that a structure or parcel of land has been elevated by fill above the base flood elevation and is, therefore, no longer located within the special flood hazard area. In order to qualify for this determination, the fill must have been permitted and placed in accordance with the community's floodplain management regulations.
(4) Conditional Letter of Map Revision (CLOMR): A formal review and comment as to whether a proposed flood protection project or other project complies with the minimum NFIP requirements for such projects with respect to delineation of special flood hazard areas. A CLOMR does not revise the effective Flood Insurance Rate Map or Flood Insurance Study; upon submission and approval of certified as-built documentation, a Letter of Map Revision may be issued by FEMA to revise the effective FIRM.

LIGHT-DUTY TRUCK. As defined in 40 C.F.R. 86.082-2, any motor vehicle rated at 8,500 pounds Gross Vehicular Weight Rating or less which has a vehicular curb weight of 6,000 pounds or less and which has a basic vehicle frontal area of forty-five (45) square feet or less, which is:

(1) Designed primarily for purposes of transportation of property or is a derivation of such a vehicle, or

(2) Designed primarily for transportation of persons and has a capacity of more than twelve (12) persons; or
(3) Available with special features enabling off-street or off-highway operation and use.

MARKET VALUE. The price at which a property will change hands between a willing buyer and a willing seller, neither party being under compulsion to buy or sell and both having reasonable knowledge of relevant facts. As used in these Regulations, the term refers to the market value of buildings and structures, excluding the land and other improvements on the parcel. Market value shall be determined by one of the following methods: (1) Actual Cash Value (replacement cost depreciated for age and quality of construction), (2) tax assessment value adjusted to approximate market value by a factor provided by the Property Appraiser, or (3) established by a qualified independent appraiser.

NEW MANUFACTURED HOME PARK OR SUBDIVISION. A manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) was completed on or after September 3, 2025

NUISANCE. That which is injurious to safety or health of an entire community or neighborhood, or any considerable number of persons, or unlawfully obstructs the free passage or use, in the customary manner, of any navigable lake, or river, bay, stream, canal, or basin.

RIVERINE. Relating to, formed by, or resembling a river (including tributaries), stream, brook, etc.

SAND DUNES. Naturally occurring accumulations of sand in ridges or mounds landward of the beach.

WATERCOURSE. A river, creek, stream, channel or other topographic feature in, on, through, or over which water flows at least periodically.

SECTION NINE.

A new Article 8, entitled FLOOD RESISTENT DEVELOPMENT, is added to Division 9, Chapter 6, entitled FLOOD PLAIN MANAGEMENT, of the Ukiah City Code and shall read as follows:

§ 9650 SUBDIVISIONS, IN ADDITION

In addition to the subdivision provisions in Appendix G, the following requirements apply:

A. In Zones AH and AO, adequate drainage paths shall be provided to guide floodwater around and away from proposed structures.
B. When fill will be placed to support buildings, the fill shall be placed in accordance with the building code and approval of the subdivision shall require submission of as-built elevations for each filled pad certified by a licensed land surveyor or registered civil engineer.

§ 9651 SITE IMPROVEMENT, IN ADDITION

In addition to the site improvement provisions in Appendix G, the requirements of this Article shall apply.

§ 9652 LIMITATIONS ON PLACEMENT OF FILL

Where the placement of fill is permitted by the building code, Appendix G, or these Regulations, fill shall be designed to be stable under conditions of flooding including rapid rise and rapid drawdown of floodwaters, prolonged inundation, and protection against flood-related erosion and scour. In addition to these requirements, when intended to support buildings and structures, fill shall comply with the requirements of the building code. The placement of fill intended to change base flood elevations, change floodway boundaries, or change boundaries of flood hazard areas shown on FIRMs shall be subject to the requirements of Section 9631 of these Regulations.

§ 9653 MANUFACTURED HOMES – INSTALLATION, IN ADDITION

In addition to the provisions for manufactured homes in Appendix G:

A. All manufactured homes installed in flood hazard areas shall be installed by an installer that is licensed pursuant to the Business and Professions Code and shall comply with the requirements of the Department of Housing and Community Development (HCD) and the requirements of these Regulations.
B. In addition to permits pursuant to Appendix G, permits from the HCD are required where the HCD is the enforcement agency for installation of manufactured homes.
C. Upon completion of installation and prior to the final inspection by the Floodplain Administrator, the installer shall submit certification of the elevation of the manufactured home, prepared by a licensed land surveyor or registered civil engineer, to the Floodplain Administrator.

§ 9654 ELEVATION REQUIREMENT FOR CERTAIN EXISTING MANUFACTURED HOME PARKS AND SUBDIVISIONS

Manufactured homes that are placed, replaced, or substantially improved on sites located in an existing manufactured home park or subdivision, unless on a site where substantial damage as a result of flooding has occurred, shall be elevated such that either the:

A. Lowest floor, or bottom of the lowest horizontal structural member, as applicable to the flood hazard area, is at or above the base flood elevation.
B. Bottom of the frame is supported by reinforced piers or other foundation elements of at least equivalent strength that are not less than 36 inches in height above grade.

§ 9655 DETACHED GARAGES AND ACCESSORY STORAGE STRUCTURES

The provision in Appendix G for garages and accessory structures shall be replaced with this Section. Detached garages and accessory storage structures used only for parking or storage are permitted below the base flood elevation provided the garages and accessory storage structures:

A. Are one story and not larger than 600 square feet in area when located in special flood hazard areas other than coastal high hazard areas.
B. Are anchored to resist flotation, collapse or lateral movement resulting from flood loads.
C. Have flood openings in accordance with the building code.

D. Have flood damage-resistant materials used below the base flood elevation.
E. Have mechanical, plumbing and electrical systems, including plumbing fixtures, elevated to or above the base flood elevation.

§ 9656 FLOOD CONTROL PROJECTS; GENERAL

In addition to applicable Federal, State and other local permits, a permit for floodplain development is required for construction of flood control projects. The purpose for the permit is to examine the impact on flood hazard areas, floodways, and base flood elevations shown on the FIRM. Unless otherwise authorized by separate regulations, issuance of this permit does not address the sufficiency of the structural elements of the proposed flood control project. Permits for floodplain development and building permits in areas affected by proposed flood control projects shall not be issued based on Conditional Letters of Map Revision issued by FEMA.

§ 9657 FLOOD CONTROL PROJECTS; APPLICATION

Applications for permits for flood control projects shall include documentation including but not limited to:

A. Site plan or document showing the existing topography and the boundaries of the flood hazard areas, floodway boundaries, and base flood elevations shown on the FIRM.
B. Site plan or document showing the proposed topography and the proposed changes to the boundaries of the flood hazard areas, floodway boundaries, and base flood elevations.
C. The documentation submitted to FEMA for a Conditional Letter of Map Revision (CLOMR) and, if issued, the Conditional Letter of Map Revision. Submittal requirements and processing fees shall be the responsibility of the applicant. A CLOMR is required when a proposed flood control project alters a floodway and increases base flood elevations more than greater than 0.00 feet, or alters a watercourse a riverine flood hazard area for which base flood elevations are included in the Flood Insurance Study or on the FIRM and floodways have not been designated and increases base flood elevations more than 1.0 foot.

SECTION TEN.

Sections 3031 through 3035 of the Ukiah City Code shall be repealed.

SECTION ELEVEN. URGENCY ORDINANCE

This ordinance is hereby declared to be necessary for the immediate preservation of the public peace, health, and safety and will take effect and be in force upon its adoption by a fourth-fifths (4/5) vote of the members of the Ukiah City Council. The facts constituting the urgency are as follows:

1. The National Flood Insurance Act of 1968 was enacted by title XIII of the Housing and Urban Development Act of 1968 to provide previously unavailable flood insurance protection to property owners in flood-prone areas. Under the Act and the regulations promulgated under the Act, specifically 44 CFR § 59.2, in order to qualify for the sale of federally-subsidized flood insurance, the City must adopt and submit to the Federal Insurance Administrator an ordinance

adopting flood plain management regulations that satisfy the requirements of 44 CFR Part 60 and that are designed to reduce or avoid future flood, mudslide or flood-related erosion damages and include enforcement provisions.

2. While the City has adopted the most recent version of Appendix G of the California Building Code which does set forth certain minimum flood plain management standards, the City does not currently have in effect flood plain management regulations that satisfy the prerequisites for the National Flood Insurance Program or the regulations set forth at 44 CFR Part 60.

3. Pursuant to 44 CFR § 59.24, a government entity that is otherwise eligible for the sale of federal flood insurance shall be subject to suspension from the National Flood Insurance Program for failing to submit copies of adequate flood plain management regulations meeting the minimum requirements of 4 CFR Part 60.

3. If the City does not achieve compliance with the requirements of 44 CFR § 59.22 by September 19, 2025, the City's eligibility for the sale of flood insurance under the National Flood Insurance Act will be suspended pursuant to 44 CFR § 59.24.

4. The City Council finds that the impending loss of community eligibility for flood insurance under the National Flood Insurance Program poses a current and immediate threat to the public health, safety, and welfare presented by catastrophic floods and related conditions during the upcoming rainy season. In the absence of this Ordinance's immediate effectiveness, the City would be unable to secure eligibility to purchase federal flood insurance to affected community members, as well as to protect the public health, safety, and welfare from the potential adverse effects of lack of insurance coverage to recover from a flood or flood-related disaster.

Ordinances may take effect immediately when adopted for the "immediate preservation of the public peace, health or safety[.]" (Gov Code, § 36937(b).) When enacted on an urgency basis, the ordinance must contain a statement of facts justifying the urgency. (*Id*.) Although courts may not investigate the truth of these facts, the mere declaration that an ordinance is passed for the immediate preservation of public peace, health, or safety is insufficient to withstand challenge. (*Crown Motors v. City of Redding* (1991) 232 Cal.App.3d 173, 179.)

SECTION TWELVE. APPLICABILITY. For the purposes of jurisdictional applicability, this ordinance shall apply in the City of Ukiah. This Ordinance shall apply to all applications for development, including building permit applications and subdivision proposals, submitted on or after the effective date of this ordinance.

SECTION THIRTEEN. INCLUSION INTO THE UKIAH CITY CODE

It is the intent of the City Council of the City of Ukiah that the provisions of this Ordinance shall become and be made a part of the Ukiah City Code, and that the sections of this Ordinance may be renumbered or re-lettered and the word "ordinance" may be changed to "section," "article," "regulation," or such other appropriate word or phrase in order to accomplish such intentions.

SECTION FOURTEEN. SEVERABILITY. Where any section, subsection, sentence, clause, or phrase of these Regulations is, for any reason, declared by the courts to be unconstitutional or invalid, such decision shall not affect the validity of the regulations as a whole, or any part thereof, other than the part so declared.

SECTION FIFTEEN.

1. Publication: Within fifteen (15) days after its adoption, this Ordinance shall be published once in a newspaper of general circulation in the City of Ukiah. In lieu of publishing the full text of the Ordinance, the City may publish a summary of the Ordinance once 5 days prior to its adoption and again within fifteen (15) days after its adoption.

2. Effective Date: The ordinance shall become effective immediately after its adoption.

Introduced by title only on , 2025, by the following roll call vote:

AYES:
NOES:
ABSENT:
ABSTAIN:

Adopted on , 2025, by the following roll call vote:

AYES:
NOES:
ABSENT:
ABSTAIN:

_____
Douglas F. Crane, Mayor

ATTEST:

_____
Kristine Lawler, CMC/City Clerk

ORDINANCE NO.

URGENCY ORDINANCE OF THE CITY COUNCIL OF THE CITY OF UKIAH AMENDING VARIOUS SECTIONS OF THE UKIAH CITY CODE TO RE-ADOPT THE MOST RECENT CALIFORNIA BUILDING STANDARDS CODE PROVISIONS REGARDING FLOODPLAN MANAGEMENT; TO ADOPT FLOOD HAZARD MAPS; TO DESIGNATE A FLOODPLAIN ADMINISTRATOR; AND TO ADOPT ADDITIONAL FLOODPLAIN MANAGEMENT REGULATIONS.

The City Council of the City of Ukiah hereby ordains as follows:

SECTION ONE. FINDINGS

WHEREAS, the Legislature of the State of California has, in Government Code Sections 65302, 65560, and 65800, conferred upon local governments the authority to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry

WHEREAS, the Federal Emergency Management Agency has identified special flood hazard areas within the boundaries of the City of Ukiah and such areas may be subject to periodic inundation which may result in loss of life and property, health and safety hazards, disruption of commerce and governmental services, extraordinary public expenditures for flood protection and relief, and impairment of the tax base, all of which adversely affect the public health, safety and general welfare, and

WHEREAS, the City of Ukiah was accepted for participation in the National Flood Insurance Program on July 19, 1982 and the City Council of the City of Ukiah desires to continue to meet the requirements of Title 44 Code of Federal Regulations, Sections 59 and 60, necessary for such participation; and

WHEREAS, pursuant to the California Health and Safety Code, Division 13, Part 1.5 and Part 2.5, the City of Ukiah is required to administer and enforce the California Building Standards Code, and such building codes contain certain provisions that apply to the design and construction of buildings and structures in flood hazard areas; and

WHEREAS, the City Council of the City of Ukiah has determined that it is in the public interest to adopt the proposed floodplain management regulations that are coordinated with the California Building Standards Code.

NOW, THEREFORE, BE IT ORDAINED by the City Council of the City of Ukiah that the following floodplain management regulations are hereby adopted.

SECTION TWO.

A new Article 1, entitled SCOPE AND ADMINISTRATION, is added to Division 9, Chapter 6, entitled FLOOD PLAIN MANAGEMENT, of the Ukiah City Code and shall read as follows:

§ 9600 TITLE

The regulations set forth in this Chapter, in combination with the flood provisions of California Code of Regulations Title 24, the California Building Standards Code (hereinafter "Building Codes," consisting of the Part 2 (building) and Part 2 Appendix G (hereinafter "Appendix G"), Part 2.5 (residential), and Part 10 (existing building), shall be known as the Floodplain Management Regulations of the City of Ukiah (hereinafter "these Regulations").

§ 9601 STATUTORY AUTHORITY

The Legislature of the State of California has, in Government Code Sections 65302, 65560, and 65800, conferred upon local governments the authority to adopt regulations designed to promote the public health, safety, and general welfare of its citizenry.

§ 9602 SCOPE

These Regulations, in combination with the flood provisions of the Building Codes shall apply to all proposed development in flood hazard areas established in Section 9616 of these Regulations

§ 9603 PURPOSES AND OBJECTIVES

The purposes and objectives of these Regulations and the flood load and flood resistant construction requirements of the building codes are to promote the public health, safety and general welfare and to minimize public and private losses due to flood conditions in specific flood hazard areas through the establishment of comprehensive regulations for management of flood hazard areas, designed to:

A. Prevent unnecessary disruption of commerce, access and public service during times of flooding.
B. Manage the alteration of natural floodplains, stream channels and shorelines;
C. Manage filling, grading, dredging and other development which may increase flood damage or erosion potential.
D. Prevent or regulate the construction of flood barriers which will divert floodwater or increase flood hazards.
E. Contribute to improved construction techniques in the floodplain.
F. Minimize damage to public and private facilities and utilities.
G. Help maintain a stable tax base by providing for the sound use and development of flood hazard areas.
H. Minimize the need for rescue and relief efforts associated with flooding.
I. Ensure that property owners, occupants, and potential owners are aware of property located in flood hazard areas.
J. Minimize the need for future expenditure of public funds for flood control projects and response to and recovery from flood events.
K. Meet the requirements of the National Flood Insurance Program for community participation set forth in Title 44 Code of Federal Regulations, Section 59.22.

§ 9604 COORDINATION WITH BUILDING CODE

Pursuant to the requirement established in State statute that the City of Ukiah administer and enforce the State building codes, the City Council of the City of Ukiah does hereby acknowledge that the building codes contain certain provisions that apply to the design and construction of buildings and

structures in flood hazard areas. Therefore, these Regulations are intended to be administered and enforced in conjunction with the Building Codes.

§ 9605 ADOPTION OF CCR TITLE 24 PART 2 APPENDIX G.

As stated in Sections 3000 and 3002 of this Code, CCR Title 24 Part 2 Appendix G Flood-Resistant Construction is hereby adopted and made a part of the California Building Standards Code and shall apply in flood hazard areas.

§ 9606 WARNING

The degree of flood protection required by these Regulations and the Building Codes is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur. Flood heights may be increased by man-made or natural causes. Enforcement of these Regulations and the building codes does not imply that land outside the special flood hazard areas, or that uses permitted within such flood hazard areas, will be free from flooding or flood damage. The flood hazard areas and base flood elevations contained in the Flood Insurance Study and shown on Flood Insurance Rate Maps and the requirements of Title 44 Code of Federal Regulations, Sections 59 and 60 may be revised by the Federal Emergency Management Agency, requiring this community to revise these Regulations to remain eligible for participation in the National Flood Insurance Program. No guaranty of vested use, existing use, or future use is implied or expressed by compliance with these Regulations.

§ 9607 DISCLAIMER OF LIABILITY

These Regulations shall not create liability on the part of the City Council of the City of Ukiah, any officer or employee thereof, the State of California, or the Federal Emergency Management Agency, for any flood damage that results from reliance on these Regulations or any administrative decision lawfully made hereunder. The Floodplain Administrator and any employee charged with the enforcement of these Regulations, while acting for the community in good faith and without malice in the discharge of the duties required by these Regulations or other pertinent law or ordinance, shall not thereby be rendered liable personally and is hereby relieved from personal liability for any damage accruing to persons or property as a result of any act or by reason of an act or omission in the discharge of official duties. Any suit instituted against an officer or employee because of an act performed by that officer or employee in the lawful discharge of duties and under the provisions of these Regulations shall be defended by a legal representative of the community until the final termination of the proceedings. The Floodplain Administrator and any subordinate shall not be liable for cost in any action, suit or proceeding that is instituted in pursuance of the provisions of these Regulations.

§ 9608 OTHER LAWS

The provisions of these Regulations shall not be deemed to nullify any provisions of local, State or Federal law.

§ 9609 ABROGATION AND GREATER RESTRICTIONS

These Regulations supersede any ordinance in effect in flood hazard areas. However, these Regulations are not intended to repeal or abrogate any existing ordinances including land development regulations, subdivision regulations, zoning ordinances, stormwater management regulations, or Building Codes. In the event of a conflict between these Regulations and any other ordinance, code, or regulation, the more restrictive shall govern.

SECTION THREE.

A new Article 2, entitled APPLICABILITY, is added to Division 9, Chapter 6, entitled FLOOD PLAIN MANAGEMENT, of the Ukiah City Code and shall read as follows:

§ 9615 GENERAL APPLICABILITY

These Regulations, in conjunction with the Building Codes, provide minimum requirements for development located in flood hazard areas, including the subdivision of land and other developments; site improvements and installation of utilities; placement and replacement of manufactured homes; placement of recreational vehicles; new construction and alterations, repair, reconstruction, rehabilitation or additions of existing buildings and structures; substantial improvement of existing buildings and structures, including repair of substantial damage; installation of tanks; temporary structures and temporary or permanent storage; utility and miscellaneous Group U buildings and structures; and certain building work exempt from permit under the Building Codes; and other buildings and development activities.

§ 9616 ESTABLISHMENT OF FLOOD HAZARD AREAS

The Flood Insurance Study for City of Ukiah, California Mendocino County dated August 5, 1985, and all subsequent amendments and revisions, and the accompanying Flood Insurance Rate Maps (FIRM), and all subsequent amendments and revisions to such maps, are hereby adopted by reference as a part of these Regulations and serve as the basis for establishing flood hazard areas. Where the Building Code establishes flood hazard areas, such areas are established by this Section. Additional maps and studies, when specifically adopted, supplement the FIS and FIRMs to establish additional flood hazard areas. Maps and studies that establish flood hazard areas are on file at the City of Ukiah Civic Center located at 300 Seminary Ave, Ukiah, CA 95482.

§ 9617 INTERPRETATION

In the interpretation and application of these Regulations, all provisions shall be:

A. Considered as minimum requirements.
B. Liberally construed in favor of the governing body.
C. Deemed neither to limit nor repeal any other powers granted under state statutes.

SECTION FOUR.

A new Article 3, entitled DUTIES AND POWERS OF THE FLOODPLAIN ADMINISTRATOR, is added to Division 9, Chapter 6, entitled FLOOD PLAIN MANAGEMENT, of the Ukiah City Code and shall read as follows:

§ 9620 DESIGNATION

The City Engineer is designated the Floodplain Administrator. The Floodplain Administrator shall have the authority to delegate performance of certain duties to other employees. Where Appendix G refers to the City Engineer, each such reference shall refer to the Floodplain Administrator. The Floodplain Administrator is authorized and directed to administer and enforce the provisions of Appendix G.

§ 9621 GENERAL AUTHORITY

The Floodplain Administrator is authorized and directed to administer the provisions of these Regulations. The Floodplain Administrator shall have the authority to render interpretations of these Regulations consistent with the intent and purpose of these Regulations and to establish policies and procedures in order to clarify the application of its provisions. Such interpretations, policies and procedures shall be consistent with the intent and purpose of these Regulations and the flood provisions of the Building Code and shall not have the effect of waiving specific requirements without the granting of a variance pursuant to Appendix G.

§ 9622 COORDINATION

The Floodplain Administrator shall coordinate with and provide comments to the Building Official to administer and enforce the flood provisions of the Building Code and to ensure compliance with the applicable provisions of these Regulations. The Floodplain Administrator and the Building Official have the authority to establish written procedures for reviewing applications and conducting inspections for buildings and for administering and documenting determinations of substantial improvement and substantial damage made pursuant to Section 9625 of these Regulations.

§ 9623 DUTIES

The duties of the Floodplain Administrator shall include but are not limited to:

A. Review all permit applications to determine whether proposed development is located in flood hazard areas established in Section 9616 of these Regulations.
B. Require development in flood hazard areas to be reasonably safe from flooding and to be designed and constructed with methods, practices and materials that minimize flood damage.
C. Interpret flood hazard area boundaries, provide available flood elevation and flood hazard information.
D. Determine whether additional flood hazard data shall be obtained or developed.
E. Review all applications and plans for development in flood hazard areas for compliance with these Regulations.
F. Complete the appropriate section of the Department of Housing and Community Development Floodplain Ordinance Compliance Certification for Manufactured Home/Mobile home Installations when submitted by applicants.
G. Review, in conjunction with the Building Official, required certifications and documentation specified by these Regulations and the Building Code to determine that such certifications and documentations are complete.

H. Establish, in coordination with the Building Official, written procedures for administering and documenting determinations of substantial improvement and substantial damage made pursuant to Section 9625 of these Regulations.
I. Coordinate with the Building Official and others to identify and investigate damaged buildings located in flood hazard areas and inform owners of the requirement to obtain permits for repairs.
J. Review requests submitted to the Building Official seeking approval to modify the strict application of the flood load and flood resistant construction requirements of the Building Code, to determine whether such requests require consideration as a variance pursuant to Appendix G.
K. Require applicants who submit hydrologic and hydraulic engineering analyses to support permit applications to submit to FEMA the data and information necessary to maintain the Flood Insurance Rate Maps when the analyses propose to change base flood elevations, flood hazard area boundaries, or floodway designations; such submissions shall be made within 6 months of such data becoming available.
L. Require applicants who propose alteration of a watercourse to notify adjacent jurisdictions and the NFIP State Coordinating Agency, and to submit copies of such notifications to FEMA.
M. Inspect development within the scope of Appendix G and inspect flood hazard areas to determine if development is undertaken without issuance of permits.
N. Prepare comments and recommendations for consideration when applicants seek variances in accordance with Appendix G.
O. Cite violations.
P. Notify the Federal Emergency Management Agency when the corporate boundaries of the City of Ukiah have been modified.

§ 9624 OTHER PERMITS REQUIRED

The applicant shall obtain all other required State and Federal permits prior to initiating work authorized by these Regulations and shall provide documentation of such permits to the Floodplain Administrator. Such permits include but are not limited to:

A. California Coastal Commission or certified Local Coastal Program, if applicable, for activities subject to the Coastal Development Permit requirements and policies of the California Coastal Act (Public Resources Code, Division 20).
B. California State Water Resources Control Board for activities that affect wetlands and alter surface water flows, in conjunction with the U.S. Army Corps of Engineers; Section 404 of the Clean Water Act.

§ 9625 SUBSTANTIAL IMPROVEMENT AND SUBSTANTIAL DAMAGE DETERMINATIONS

For applications for building permits to improve buildings and structures, including alterations, movement, repair, additions, rehabilitations, renovations, substantial improvements, repairs of substantial damage, and any other improvement of or work on such buildings and structures, the Floodplain Administrator, in coordination with the Building Official, shall:

A. Estimate the market value, or require the applicant to obtain a professional appraisal prepared by a qualified independent appraiser, of the market value of the building or structure before the start of construction of the proposed work; in the case of repair, the market value of the

building or structure shall be the market value before the damage occurred and before any repairs are made.

B. Compare the cost to perform the improvement, the cost to repair the damaged building to its pre-damaged condition, or the combined costs of improvements and repairs, where applicable, to the market value of the building or structure.
C. Determine and document whether the proposed work constitutes substantial improvement or repair of substantial damage.
D. Notify the applicant when it is determined that the work constitutes substantial improvement or repair of substantial damage and that compliance with the flood resistant construction requirements of the Building Code is required and notify the applicant when it is determined that work does not constitute substantial improvement or repair of substantial damage.

§ 9626 DEPARTMENT RECORDS

In addition to the requirements of the Building Code and Appendix G, and regardless of any limitation on the period required for retention of public records, the Floodplain Administrator shall maintain and permanently keep and make available for public inspection all records that are necessary for the administration of these Regulations and the flood provisions of the Building Codes, including Flood Insurance Studies, Flood Insurance Rate Maps (FIRMs); documents from FEMA that amend or revise FIRMs; records of issuance of permits and denial of permits; determinations of whether proposed work constitutes substantial improvement or repair of substantial damage; required certifications and documentation specified by the building codes and these Regulations; notifications to adjacent communities, FEMA, and the State related to alterations of watercourses; assurance that the flood carrying capacity of altered waterways will be maintained; documentation related to variances, including justification for issuance or denial; and records of enforcement actions taken pursuant to these Regulations and the flood resistant provisions of the building codes.

SECTION FIVE.

A new Article 4, entitled SITE PLANS AND DOCUMENTATION, is added to Division 9, Chapter 6, entitled FLOOD PLAIN MANAGEMENT, of the Ukiah City Code and shall read as follows:

§ 9630 ADDITIONAL SITE PLAN INFORMATION

In addition to the site plan requirements of the Building Code and Appendix G shall include, as applicable to the proposed development:

A. Location of the proposed activity and proposed structures; locations of water supply, sanitary sewer, and other utilities; and locations of existing buildings and structures.
B. Location, extent, amount, and proposed final grades of any filling, grading, or excavation.
C. Where the placement of fill is proposed, the amount, type, and source of fill material; compaction specifications; a description of the intended purpose of the fill areas; and evidence that the proposed fill areas are the minimum necessary to achieve the intended purpose.
D. Extent of any proposed alteration of sand dunes, provided such alteration is approved by the California Coastal Commission or certified Local Coastal Program, if applicable.
E. Existing and proposed alignment of any proposed alteration of a watercourse.

§ 9631 ADDITIONAL ENGINEERING DATA

When additional hydrologic, hydraulic or other engineering data, studies, and additional data and analyses are submitted to support an application, the applicant has the right to seek a Letter of Map Change from FEMA to change the base flood elevations, change floodway boundaries, or change boundaries of flood hazard areas shown on FIRMs, and to submit such data to FEMA for such purposes. The analyses shall be prepared by a qualified registered professional engineer in a format required by FEMA. Submittal requirements and processing fees shall be the responsibility of the applicant. Provided FEMA issues a Conditional Letter of Map Revision, construction of proposed flood control projects and land preparation for development are permitted, including clearing, excavation, grading, and filling. Permits for construction of buildings shall not be issued until the applicant satisfies the FEMA requirements for issuance of a Letter of Map Revision.

SECTION SIX.

A new Article 5, entitled VARIANCES, is added to Division 9, Chapter 6, entitled FLOOD PLAIN MANAGEMENT, of the Ukiah City Code and shall read as follows:

§ 9635 VARIANCES, IN ADDITION

In addition to the variance provisions of Appendix G:

A. The considerations and conditions for variances set forth in Appendix G are based on the general principle of zoning law that variances pertain to a piece of property and are not personal in nature. A variance may be issued for a parcel of property with physical characteristics so unusual that complying with the requirements of these Regulations would create an exceptional hardship to the applicant or the surrounding property owners. The characteristics must be unique to the property and not be shared by adjacent parcels. The unique characteristic must pertain to the land itself, not to the structure, its inhabitants, or the property owners. The issuance of a variance is for floodplain management purposes only. Federal flood insurance premium rates are determined by the National Flood Insurance Program according to actuarial risk and will not be modified by the granting of a variance.
B. It is the duty of the City Council of the City of Ukiah to promote public health, safety and welfare and minimize losses from flooding. This duty is so compelling and the implications of property damage and the cost of insuring a structure built below flood level are so serious that variances from the elevation or other requirements in the building codes should be quite rare. The long-term goal of preventing and reducing flood loss and damage, and minimizing recovery costs, inconvenience, danger, and suffering, can only be met when variances are strictly limited. Therefore, the variance requirements in these Regulations are detailed and contain multiple provisions that must be met before a variance can be properly issued. The criteria are designed to screen out those situations in which alternatives other than a variance are more appropriate.

§ 9636 AGRICULTURAL STRUCTURES

A variance is authorized to be issued for the construction or substantial improvement of agricultural structures that are not elevated or dry floodproofed, provided the requirements of this Article are satisfied and:

A. A determination has been made that the proposed agricultural structure:

1. Is used exclusively in connection with the production, harvesting, storage, raising, or drying of agricultural commodities and livestock, or storage of tools or equipment used in connection with these purposes or uses, and will be restricted to such exclusive uses.
2. Has low damage potential.
3. Does not increase risks and pose a danger to public health, safety, and welfare if flooded and contents are released, including but not limited to the effects of flooding on manure storage, livestock confinement operations, liquified natural gas terminals, and production and storage of highly volatile, toxic, or water-reactive materials.
4. Complies with the wet floodproofing construction requirements of paragraph B, below.

B. Wet floodproofing construction requirements.

1. Anchored to resist flotation, collapse, and lateral movement.
2. When enclosed by walls, walls have flood openings that comply with the flood opening requirements of ASCE 24, Chapter 2.
3. Flood damage-resistant materials are used below the base flood elevation.
4. Mechanical, electrical, and utility equipment are elevated above the base flood elevation.

SECTION SEVEN.

A new Article 6, entitled VIOLATIONS, is added to Division 9, Chapter 6, entitled FLOOD PLAIN MANAGEMENT, of the Ukiah City Code and shall read as follows:

§ 9640 VIOLATIONS, GENERAL

In addition to the violation provisions of the building code and Appendix G, any development requiring a permit from the City in any flood hazard area that is being performed without an issued permit or that is in conflict with an issued permit shall be deemed a violation.

§ 9641 BUILDINGS AND STRUCTURES

A building or structure without the documentation of the elevation of the lowest floor, other required design certifications, or other evidence of compliance required by these Regulations or the building code, is presumed to be a violation until such time as required documentation is submitted. Violation of the requirements shall constitute a misdemeanor.

§ 9642 AUTHORITY

The Floodplain Administrator is authorized to serve notices of violation or stop work orders to owners of property involved, to the owner's agent, or to the person or persons doing the work for development that is not within the scope of the Building Codes, but is regulated by these Regulations and that is determined to be a violation.

§ 9643 UNLAWFUL CONTINUANCE

Any person who shall continue any work after having been served with a notice of violation or a stop work order, except such work as that person is directed to perform to remove or remedy a violation or unsafe condition, shall be subject to penalties as prescribed by federal, state, or local law.

SECTION EIGHT.

A new Article 7, entitled DEFINITIONS, is added to Division 9, Chapter 6, entitled FLOOD PLAIN MANAGEMENT, of the Ukiah City Code and shall read as follows:

§ 9645 GENERAL

The following words and terms shall, for the purposes of these Regulations, have the meanings shown herein. Other terms are defined in the Building Code and Appendix G and terms are defined where used in the Residential Code (rather than in the Definitions section). Where terms are not defined, such terms shall have ordinarily accepted meanings such as the context implies.

§ 9646 DEFINITIONS

ACCESSORY STRUCTURE. A structure on the same parcel of property as a principal structure and the use of which is incidental to the use of the principal structure. For floodplain management purposes, the term includes only accessory structures used for parking and storage.

AGRICULTURAL STRUCTURE. A walled and roofed structure used exclusively for agricultural purposes or uses in connection with the production, harvesting, storage, raising, or drying of agricultural commodities and livestock, including aquatic organisms. Structures that house tools or equipment used in connection with these purposes or uses are also considered to have agricultural purposes or uses.

ALTERATION OF A WATERCOURSE. A dam, impoundment, channel relocation, change in channel alignment, channelization, or change in cross-sectional area of the channel or the channel capacity, or any other form of modification which may alter, impede, retard or change the direction and/or velocity of the riverine flow of water during conditions of the base flood.

DEVELOPMENT. Any manmade change to improved or unimproved real estate, including but not limited to, buildings or other structures, tanks, temporary structures, temporary or permanent storage of materials, mining, dredging, filling, grading, paving, excavations, drilling operations and other land-disturbing activities.

ENCROACHMENT. The placement of fill, excavation, buildings, permanent structures or other development into a flood hazard area which may impede or alter the flow capacity of riverine flood hazard areas.

EXCEPTIONAL HARDSHIP. For the purpose of variances from these Regulations or the building code, the exceptional difficulty that would result from a failure to grant a requested variance. Mere economic or financial hardship is not exceptional. Inconvenience, aesthetic considerations, physical handicaps, personal preferences, or the disapproval of one's neighbors do not, as a rule, qualify as exceptional hardships. All of these circumstances can be resolved through other means without granting variances, even when the alternatives are more expensive or require the property owner to build elsewhere or put the parcel to a different use than originally intended.

EXISTING MANUFACTURED HOME PARK OR SUBDIVISION. A manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) was completed before September 3, 2025.

EXPANSION TO AN EXISTING MANUFACTURED HOME PARK OR SUBDIVISION. The preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

FLOOD CONTROL PROJECT. A dam or barrier design and constructed to keep water away from or out of a specified area, including but not limited to levees, floodwalls, and channelization.

FRAUD OR VICTIMIZATION. For the purpose of variances from these Regulations or the building code, the intentional use of deceit to deprive another of rights or property, making a victim of the deprived person or the public. As it pertains to buildings granted variances to be constructed below the elevation required by the building code, future owners or tenants of such buildings and the community as a whole may bear the burden of increased risk of damage from floods, increased cost of flood insurance, and increased recovery costs, inconvenience, danger, and suffering.

LETTER OF MAP CHANGE (LOMC). An official determination issued by FEMA that amends or revises an effective Flood Insurance Rate Map or Flood Insurance Study. Letters of Map Change include:

(1) Letter of Map Amendment (LOMA): An amendment based on technical data showing that a property was incorrectly included in a designated special flood hazard area. A LOMA amends the current effective Flood Insurance Rate Map and establishes that a specific property, portion of a property, or structure is not located in a special flood hazard area.
(2) Letter of Map Revision (LOMR): A revision based on technical data that may show changes to flood zones, flood elevations, special flood hazard area boundaries and floodway delineations, and other planimetric features.
(3) Letter of Map Revision Based on Fill (LOMR-F): A determination that a structure or parcel of land has been elevated by fill above the base flood elevation and is, therefore, no longer located within the special flood hazard area. In order to qualify for this determination, the fill must have been permitted and placed in accordance with the community's floodplain management regulations.
(4) Conditional Letter of Map Revision (CLOMR): A formal review and comment as to whether a proposed flood protection project or other project complies with the minimum NFIP requirements for such projects with respect to delineation of special flood hazard areas. A CLOMR does not revise the effective Flood Insurance Rate Map or Flood Insurance Study; upon submission and approval of certified as-built documentation, a Letter of Map Revision may be issued by FEMA to revise the effective FIRM.

LIGHT-DUTY TRUCK. As defined in 40 C.F.R. 86.082-2, any motor vehicle rated at 8,500 pounds Gross Vehicular Weight Rating or less which has a vehicular curb weight of 6,000 pounds or less and which has a basic vehicle frontal area of forty-five (45) square feet or less, which is:

(1) Designed primarily for purposes of transportation of property or is a derivation of such a vehicle, or

(2) Designed primarily for transportation of persons and has a capacity of more than twelve (12) persons; or
(3) Available with special features enabling off-street or off-highway operation and use.

MARKET VALUE. The price at which a property will change hands between a willing buyer and a willing seller, neither party being under compulsion to buy or sell and both having reasonable knowledge of relevant facts. As used in these Regulations, the term refers to the market value of buildings and structures, excluding the land and other improvements on the parcel. Market value shall be determined by one of the following methods: (1) Actual Cash Value (replacement cost depreciated for age and quality of construction), (2) tax assessment value adjusted to approximate market value by a factor provided by the Property Appraiser, or (3) established by a qualified independent appraiser.

NEW MANUFACTURED HOME PARK OR SUBDIVISION. A manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) was completed on or after June 16, 1982.

NUISANCE. That which is injurious to safety or health of an entire community or neighborhood, or any considerable number of persons, or unlawfully obstructs the free passage or use, in the customary manner, of any navigable lake, or river, bay, stream, canal, or basin.

RIVERINE. Relating to, formed by, or resembling a river (including tributaries), stream, brook, etc.

SAND DUNES. Naturally occurring accumulations of sand in ridges or mounds landward of the beach.

WATERCOURSE. A river, creek, stream, channel or other topographic feature in, on, through, or over which water flows at least periodically.

SECTION NINE.

A new Article 8, entitled FLOOD RESISTENT DEVELOPMENT, is added to Division 9, Chapter 6, entitled FLOOD PLAIN MANAGEMENT, of the Ukiah City Code and shall read as follows:

§ 9650 SUBDIVISIONS, IN ADDITION

In addition to the subdivision provisions in Appendix G, the following requirements apply:

A. In Zones AH and AO, adequate drainage paths shall be provided to guide floodwater around and away from proposed structures.
B. When fill will be placed to support buildings, the fill shall be placed in accordance with the Building Code and approval of the subdivision shall require submission of as-built elevations for each filled pad certified by a licensed land surveyor or registered civil engineer.

§ 9651 SITE IMPROVEMENT, IN ADDITION

In addition to the site improvement provisions in Appendix G, the requirements of this Article shall apply.

§ 9652 LIMITATIONS ON PLACEMENT OF FILL

Where the placement of fill is permitted by the Building Code, Appendix G, or these Regulations, fill shall be designed to be stable under conditions of flooding including rapid rise and rapid drawdown of floodwaters, prolonged inundation, and protection against flood-related erosion and scour. In addition to these requirements, when intended to support buildings and structures, fill shall comply with the requirements of the Building Code. The placement of fill intended to change base flood elevations, change floodway boundaries, or change boundaries of flood hazard areas shown on FIRMs shall be subject to the requirements of Section 9631 of these Regulations.

§ 9653 MANUFACTURED HOMES – INSTALLATION, IN ADDITION

In addition to the provisions for manufactured homes in Appendix G:

A. All manufactured homes installed in flood hazard areas shall be installed by an installer that is licensed pursuant to the Business and Professions Code and shall comply with the requirements of the Department of Housing and Community Development (HCD) and the requirements of these Regulations.
B. In addition to permits pursuant to Appendix G, permits from the HCD are required where the HCD is the enforcement agency for installation of manufactured homes.
C. Upon completion of installation and prior to the final inspection by the Floodplain Administrator, the installer shall submit certification of the elevation of the manufactured home, prepared by a licensed land surveyor or registered civil engineer, to the Floodplain Administrator.

§ 9654 ELEVATION REQUIREMENT FOR CERTAIN EXISTING MANUFACTURED HOME PARKS AND SUBDIVISIONS

Manufactured homes that are placed, replaced, or substantially improved on sites located in an existing manufactured home park or subdivision, unless on a site where substantial damage as a result of flooding has occurred, shall be elevated such that either the:

A. Lowest floor, or bottom of the lowest horizontal structural member, as applicable to the flood hazard area, is at or above the base flood elevation.
B. Bottom of the frame is supported by reinforced piers or other foundation elements of at least equivalent strength that are not less than 36 inches in height above grade.

§ 9655 DETACHED GARAGES AND ACCESSORY STORAGE STRUCTURES

The provision in Appendix G for garages and accessory structures shall be replaced with this Section. Detached garages and accessory storage structures used only for parking or storage are permitted below the base flood elevation provided the garages and accessory storage structures:

A. Are one story and not larger than 600 square feet in area when located in special flood hazard areas other than coastal high hazard areas.
B. Are anchored to resist flotation, collapse or lateral movement resulting from flood loads.
C. Have flood openings in accordance with the building code.

D. Have flood damage-resistant materials used below the base flood elevation.
E. Have mechanical, plumbing and electrical systems, including plumbing fixtures, elevated to or above the base flood elevation.

§ 9656 FLOOD CONTROL PROJECTS; GENERAL

In addition to applicable Federal, State and other local permits, a permit for floodplain development is required for construction of flood control projects. The purpose for the permit is to examine the impact on flood hazard areas, floodways, and base flood elevations shown on the FIRM. Unless otherwise authorized by separate regulations, issuance of this permit does not address the sufficiency of the structural elements of the proposed flood control project. Permits for floodplain development and building permits in areas affected by proposed flood control projects shall not be issued based on Conditional Letters of Map Revision issued by FEMA.

§ 9657 FLOOD CONTROL PROJECTS; APPLICATION

Applications for permits for flood control projects shall include documentation including but not limited to:

A. Site plan or document showing the existing topography and the boundaries of the flood hazard areas, floodway boundaries, and base flood elevations shown on the FIRM.
B. Site plan or document showing the proposed topography and the proposed changes to the boundaries of the flood hazard areas, floodway boundaries, and base flood elevations.
C. The documentation submitted to FEMA for a Conditional Letter of Map Revision (CLOMR) and, if issued, the Conditional Letter of Map Revision. Submittal requirements and processing fees shall be the responsibility of the applicant. A CLOMR is required when a proposed flood control project alters a floodway and increases base flood elevations more than greater than 0.00 feet, or alters a watercourse a riverine flood hazard area for which base flood elevations are included in the Flood Insurance Study or on the FIRM and floodways have not been designated and increases base flood elevations more than 1.0 foot.

SECTION TEN.

Sections 3032 through 3035 of the Ukiah City Code shall be repealed.

SECTION ELEVEN. URGENCY ORDINANCE

This ordinance is hereby declared to be necessary for the immediate preservation of the public peace, health, and safety and will take effect and be in force upon its adoption by a fourth-fifths (4/5) vote of the members of the Ukiah City Council. The facts constituting the urgency are as follows:

1. The National Flood Insurance Act of 1968 was enacted by title XIII of the Housing and Urban Development Act of 1968 to provide previously unavailable flood insurance protection to property owners in flood-prone areas. Under the Act and the regulations promulgated under the Act, specifically 44 CFR § 59.2, in order to qualify for the sale of federally-subsidized flood insurance, the City must adopt and submit to the Federal Insurance Administrator an ordinance

adopting flood plain management regulations that satisfy the requirements of 44 CFR Part 60 and that are designed to reduce or avoid future flood, mudslide or flood-related erosion damages and include enforcement provisions.

2. While the City has adopted the most recent version of Appendix G of the California Building Code which do set forth certain minimum flood plain management standards, the City does not currently have in effect flood plain management regulations that satisfy the prerequisites for the National Flood Insurance Program or the regulations set forth at 44 CFR Part 60.

3. Pursuant to 44 CFR § 59.24, a government entity that is otherwise eligible for the sale of federal flood insurance shall be subject to suspension from the National Flood Insurance Program for failing to submit copies of adequate flood plain management regulations meeting the minimum requirements of 4 CFR Part 60.

3. If the City does not achieve compliance with the requirements of 44 CFR § 59.22 by September 19, 2025, the City's eligibility for the sale of flood insurance under the National Flood Insurance Act will be suspended pursuant to 44 CFR § 59.24.

4. The City Council finds that the impending loss of community eligibility for flood insurance under the National Flood Insurance Program poses a current and immediate threat to the public health, safety, and welfare presented by catastrophic floods and related conditions during the upcoming rainy season. In the absence of this Ordinance's immediate effectiveness, the City would be unable to secure eligibility to purchase federal flood insurance to affected community members, as well as to protect the public health, safety, and welfare from the potential adverse effects of lack of insurance coverage to recover from a flood or flood-related disaster.

Ordinances may take effect immediately when adopted for the "immediate preservation of the public peace, health or safety[.]" (Gov Code, § 36937(b).) When enacted on an urgency basis, the ordinance must contain a statement of facts justifying the urgency. (*Id*.) Although courts may not investigate the truth of these facts, the mere declaration that an ordinance is passed for the immediate preservation of public peace, health, or safety is insufficient to withstand challenge. (*Crown Motors v. City of Redding* (1991) 232 Cal.App.3d 173, 179.)

SECTION TWELVE. APPLICABILITY. For the purposes of jurisdictional applicability, this ordinance shall apply in the City of Ukiah. This Ordinance shall apply to all applications for development, including building permit applications and subdivision proposals, submitted on or after the effective date of this ordinance.

SECTION THIRTEEN. INCLUSION INTO THE UKIAH CITY CODE

It is the intent of the City Council of the City of Ukiah that the provisions of this Ordinance shall become and be made a part of the Ukiah City Code, and that the sections of this Ordinance may be renumbered or re-lettered and the word "ordinance" may be changed to "section," "article," "regulation," or such other appropriate word or phrase in order to accomplish such intentions.

SECTION FOURTEEN. SEVERABILITY. Where any section, subsection, sentence, clause, or phrase of these Regulations is, for any reason, declared by the courts to be unconstitutional or invalid, such decision shall not affect the validity of the regulations as a whole, or any part thereof, other than the part so declared.

SECTION FIFTEEN.

1. Publication: Within fifteen (15) days after its adoption, this Ordinance shall be published once in a newspaper of general circulation in the City of Ukiah. In lieu of publishing the full text of the Ordinance, the City may publish a summary of the Ordinance once 5 days prior to its adoption and again within fifteen (15) days after its adoption.

2. Effective Date: The ordinance shall become effective immediately after its adoption.

Introduced by title only on September 3, 2025, by the following roll call vote:

AYES:
NOES:
ABSENT:
ABSTAIN:

Adopted on September 3, 2025, by the following roll call vote:

AYES:
NOES:
ABSENT:
ABSTAIN:

_____
Douglas F. Crane, Mayor

ATTEST:

_____
Araceli Sandoval, Deputy City Clerk

Agenda Item No: 13.c.

MEETING DATE/TIME: 9/3/2025

ITEM NO: 2025-958

City of Ukiah

AGENDA SUMMARY REPORT

SUBJECT: Adopt Resolution Affirming that the Proclamation of a Local Emergency Due to Conditions Caused by Atmospheric Rivers Causing Damage to Public Infrastructure Remains in Effect.

DEPARTMENT: City Manager / Admin

PREPARED BY: Traci Boyl, Senior Management Analyst

PRESENTER: Traci Boyl, Sr. Management Analyst to the City Manager's Office

ATTACHMENTS:

1. Resolution 2025-07 - Proclamation of Local Emergency
2. Resolution 2025-37 - Ratification of Proclamation of Local Emergency
3. Continuing Atmospheric River State of Emergency Resolution

Summary: The City Council will consider the adoption of a Resolution affirming that the local emergency remains in effect.

Background: On February 19, 2025, the Director of Emergency Services proclaimed a local emergency pursuant to Ukiah City Code Section 5125 (Ordinance No. 995, Section 1) due to ongoing atmospheric rivers that threatened and damaged local infrastructure. And, on February 19, 2025, the Ukiah City Council approved Resolution No. 2025-07 ratifying the proclamation of a local emergency affecting the City (Attachment 1). California Government Code section 8630(c) requires the Local Emergency Proclamation be reviewed and renewed no more than every 60 days. On July 16, 2025, the City Council adopted Resolution 2025-37 affirming the proclamation of the continuing local emergency (Attachment 2).

Discussion: To ensure compliance with applicable law, and due to the fact that the effect of saturated soil conditions from the previous storm season continue to threaten public infrastructure, Staff recommends the City Council reaffirm that the local emergency remains in effect. Though the rainy season has ended and there is no longer a present threat of severe storms, the conditions caused by the storm events that necessitated a declaration of a local emergency are still present and must be mitigated.

Therefore, Staff recommends Council adopt a Resolution (Attachment 3) affirming that the local emergency remains in effect.

Recommended Action: Adopt a resolution affirming that the declaration of a local emergency remains in effect.

BUDGET AMENDMENT REQUIRED: N/A

CURRENT BUDGET AMOUNT: N/A

PROPOSED BUDGET AMOUNT:

FINANCING SOURCE:

REVENUE: Yes / No GRANT: Yes / No

PREVIOUS CONTRACT/PURCHASE ORDER NO.:

COORDINATED WITH: Darcy Vaughn, City Attorney's Office

STRATEGIC PLAN (SP):

CLIMATE INITIATIVES (CI):

GENERAL PLAN ELEMENTS (GP):

Approved:
Sage Sangiacomo, City Manager

RESOLUTION NO. 2025-07

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF UKIAH RATIFYING FEBRUARY 19, 2025 PROCLAMATION OF A LOCAL EMERGENCY

WHEREAS:

1. On February 19, 2025, under the authority in Ukiah City Code Section 5125 (Ordinance No. 995,§1), the Director of Emergency Services proclaimed the existence of a local emergency as a result of conditions created by ongoing Atmospheric Rivers affecting the City of Ukiah ("City") beginning February 5th, and conditions still exists. A true and correct copy of the Resolution Proclaiming Existence of a Local Emergency is attached hereto as Exhibit A and incorporated herein by this reference; and

2. While heavy rainfall has stopped, soils are saturated, and heavy run-off continues threatening additional damage to PZ1-N water tank and the newly acquired Western Hills road system, all of which threaten to continue or create local emergency conditions; and

3. The City Council has reviewed Exhibit A and concurs with the findings in the Proclamation; and

4. The City Council will review this declaration at its next regular meeting, occurring not more than 14 days from the date the Resolution Proclaiming Existence of a Local Emergency is ratified by this resolution;

NOW, THEREFORE, BE IT RESOLVED that the City Council hereby ratifies the proclamation of a "local emergency" by the Director of Emergency Services and proclaims and orders that said local emergency shall be deemed to continue to exist until its termination is proclaimed by the City Council. The City Council shall review the need for continuing the local emergency at least once every 14 days until its termination is proclaimed by the City Council.

BE IT FURTHER RESOLVED that the City Council hereby proclaims and orders that during the existence of a local emergency, the powers, functions, and duties of the Director of Emergency Services and the emergency organization of the City shall be those prescribed by (1) state law, (2) City ordinances and resolutions adopted by the City Council and (3) the City Operational Area Emergency Plan, as approved by the City Council.

BE IT FURTHER RESOLVED that a copy of this declaration shall be forwarded to the County of Mendocino Office of Emergency Services (OES) with a request that OES forward the Resolution to California Office of Emergency Services for concurrence of a local emergency.

PASSED AND ADOPTED this 19th day of February, 2025, by the following roll call vote:

AYES: Councilmembers Rodin, Criss, Orozco, Sher, and Mayor Crane
NOES: None
ABSENT: None
ABSTAIN: None

Douglas F. Crane, Mayor

ATTEST:

Kristine Lawler, City Clerk

Exhibit A

A RESOLUTION PROCLAIMING EXISTENCE OF A LOCAL EMERGENCY DUE TO ONGOING ATMOSPHERIC RIVERS CAUSING DAMAGE TO PUBLIC INFRASTRCTURE

WHEREAS, Ukiah City Code Section 5125 (Ordinance No. 995, Section 1) empowers the Director of Emergency services to proclaim the existence or threatened existence of a local emergency when said city is affected or likely to be affected by a public calamity; and

WHEREAS, on Friday, February 4, 2025, the City of Ukiah experienced another Atmospheric River event, resulting in localized flooding within the city and surrounding areas; and

WHEREAS, the Director of Emergency Services of the City of Ukiah does hereby find that conditions of extreme peril to the safety or persons and property arose within the City, caused by severe winter storms; and

WHEREAS, although the City took immediate action to prepare for and respond to the storm, including monitoring streets and clearing storm drains, repositioning public safety resources as necessary, providing the public with preparedness communication, and attending Mendocino County's operational call, the conditions caused damage beyond the control and resources of City personnel; and

WHEREAS, while the storm was short-lived, it brought significant heavy rain to already saturated soil, leading to severe damage to public infrastructure, including a landslide near Pressure Zone 1 North (PZ1-N) water tank located above the City's golf course, requiring emergency repair to prevent additional damage to the tank and caused additional slides on the newly-acquired Western Hills property damaging roads and culverts there; and

WHEREAS, while the County did not experience significant damage, the City's reported damage meets the State's required threshold for requesting financial support; and.

WHEREAS, declaring a local emergency enables the City to pursue State and Federal assistance, including reimbursement for eligible emergency response costs under the California Disaster Assistance Act and potential Federal Emergency Management Agency aid if a federal disaster is declared.

NOW, THEREFORE, IT IS HEREBY PROCLAIMED that a local emergency now exists throughout the City of Ukiah.

IT IS FURTHER PROCLAIMED AND ORDERED that during the existence of said local emergency the powers, functions, and duties of the emergency organization of this City shall be those prescribed by state law and ordinances and resolutions of this City, and that this emergency proclamation shall expire in 7 days after issuance unless confirmed and ratified by City Council of the City of Ukiah.

DATED: 2-19-25 **By:**

RESOLUTION NO. 2025-37

A RESOLUTION CONTINUING THE RATIFICATION OF A PROCLAMATION OF A LOCAL EMERGENCY DUE TO CONDITIONS CAUSED BY ATMOSPHERIC RIVERS CAUSING DAMAGE TO PUBLIC INFRASTRUCTURE AND AFFIRMING THAT THE LOCAL EMERGENCY REMAINS IN EFFECT

WHEREAS, on February 19, 2025, the Director of Emergency Services proclaimed a local emergency pursuant to Ukiah City Code Section 5125 (Ordinance No. 995, Section 1) due to ongoing atmospheric rivers which threatened and damaged local infrastructure; and

WHEREAS, on February 19, 2025, the Ukiah City Council approved Resolution No. 2025-07 ratifying the proclamation of a local emergency affecting the City; and

WHEREAS, on April 16, 2025, the Ukiah City Council approved Resolution No. 2025-15 continuing ratification of the proclamation of a local emergency affecting the City; and

WHEREAS, on June 4, 2025, the Ukiah City Council approved Resolution No. 2025-26 continuing ratification of the proclamation of a local emergency affecting the City; and

WHEREAS, Government Code section 8630(c) requires the Local Emergency Proclamation be reviewed every 60 days; and

WHEREAS, the local emergency remains in effect due to the fact that saturated soils and associated conditions caused by atmospheric rivers during the past storm season continue to threaten public infrastructure.

NOW THEREFORE BE IT RESOLVED by the City Council of the City of Ukiah reaffirms that a local emergency remains in effect due to the previous atmospheric rivers and continuing associated damage to public infrastructure.

BE IT FURTHER RESOLVED that a copy of this declaration shall be forwarded to the County of Mendocino Office of Emergency Services (OES) with a request that OES forward the Resolution to California Office of Emergency Services.

PASSED AND ADOPTED this 16th day of July, 2025, by the following roll call vote:

AYES: Councilmembers Rodin, Criss, Orozco, Sher, and Mayor Crane.
NOES: None.
ABSENT: None.
ABSTAIN: None.

Douglas F. Crane, Mayor

ATTEST:

Kristine Lawler, City Clerk

RESOLUTION NO. 2025-

A RESOLUTION CONTINUING THE RATIFICATION OF A PROCLAMATION OF A LOCAL EMERGENCY DUE TO CONDITIONS CAUSED BY ATMOSPHERIC RIVERS CAUSING DAMAGE TO PUBLIC INFRASTRUCTURE AND AFFIRMING THAT THE LOCAL EMERGENCY REMAINS IN EFFECT

WHEREAS, on February 19, 2025, the Director of Emergency Services proclaimed a local emergency pursuant to Ukiah City Code Section 5125 (Ordinance No. 995, Section 1) due to ongoing atmospheric rivers which threatened and damaged local infrastructure; and

WHEREAS, on February 19, 2025, the Ukiah City Council approved Resolution No. 2025-07 ratifying the proclamation of a local emergency affecting the City; and

WHEREAS, Government Code section 8630(c) requires the Local Emergency Proclamation be reviewed every 60 days; and

WHEREAS, the local emergency remains in effect due to the fact that saturated soils and associated conditions caused by atmospheric rivers during the past storm season continue to threaten public infrastructure.

NOW THEREFORE BE IT RESOLVED by the City Council of the City of Ukiah reaffirms that a local emergency remains in effect due to the previous atmospheric rivers and continuing associated damage to public infrastructure.

BE IT FURTHER RESOLVED that a copy of this declaration shall be forwarded to the County of Mendocino Office of Emergency Services (OES) with a request that OES forward the Resolution to California Office of Emergency Services.

PASSED AND ADOPTED this 3rd day of September 2025, by the following roll call vote:

AYES:
NOES:
ABSENT:
ABSTAIN:

_____
Douglas F. Crane, Mayor

ATTEST:

_____
Kristine Lawler, City Clerk

Agenda Item No: 14.a.

MEETING DATE/TIME: 9/3/2025

ITEM NO: 2025-968

City of Ukiah

AGENDA SUMMARY REPORT

SUBJECT: Resolve Bid Protests Received for Specification No. 25-04 for the Remodel of 501 South State Street, and Approve Final Award Recommendation.

DEPARTMENT: Finance

PREPARED BY: Myles Fisette, Purchasing Manager

PRESENTER: Myles Fisette, Purchasing Manager

ATTACHMENTS:

1. Spec 25-04 Remodel of 501 South State Street
2. Bid Tabulation Spec 25-04 Remodel of 501 South State Street
3. Bid Protest- Remodel BofA
4. Bid Protest Response BofA
5. Cortlandt Roofing Ukiah Bank of America Proposal -
6. 14a Correspondence Received - Myles Fisette

Summary: Council will conduct a hearing to consider a bid protest from the second-lowest bidder, Cupples and Sons Construction Inc., to the apparent lowest bid from DMR Builders, and make a final determination based on evidence and argument presented during the hearing, including the bid protest and Staff's recommendation to award a contract to DMR Builders in the amount of $3,487,850 for Specification No. 25-04, Remodel of 501 South State Street.

Background: In 2020, the City acquired the property located at 501 S. State Street with the intention of utilizing it as a centralized location for providing municipal services. In May 2021, a contract was awarded to The KPA Group to develop plans and specifications for barrier removal at the site, a task that was successfully completed in October 2021. A State Community Development Block Grant (CDBG) in the amount of $50,000 was applied for and awarded to the City to complete the accessibility improvements design portion of the project. Following completion of the CDBG-funded phase of the project, in January 2023, The KPA Group was awarded a contract for Phase 2 Design services. These services included project management coordination, schematic design, design development, construction documents, and bidding services. On July 16, 2025, Council approved the design and directed Staff to proceed with a Request for Bid (Attachment 1) for the construction phase.

Discussion: On July 17, 2025, a request for bids notice for the project was released to contractors from the City's Qualified Bidders list and Northern California Builders Exchanges and posted to the City's website. Bids were opened on August 19, 2025, with six (6) bidders responding. A copy of the bid tabulation is provided as Attachment 2. The bid from the apparent low bidder, DMR Builders, was totaled incorrectly. The bid was submitted with a total of $3,487,490 but was calculated through the line item pricing to be $3,487,850. Similarly, the bid from the apparent second lowest bidder, Cupples and Sons Construction Inc., was submitted with a total of $3,781,632, while the corrected total based on line item pricing is $3,730,932. Staff recommends that the City Council waive these irregularities, as they do not affect the bid outcome or the determination of the lowest responsible bidder.

On August 22, 2025, Cupples and Sons Construction Inc., the second lowest bidder, submitted a bid protest (Attachment 3) against the bid presented by the apparent low bidder, DMR Builders. Cupples and Sons Construction's protest claims that DMR's bid violates California Public Contract Code ("PRC") Section 4104,

which requires bids for public works projects to list all subcontractors who the bidder intends to use for work in excess of one-half of 1 percent of the prime contractor's total bid. Section 4101 is part of the Subletting and Subcontracting Fair Practices Ac. [PRC Sections 4100 - 4114.) The bidder must include in its bid the name, the location of the place of business, the California contractor license number, and public works contractor registration number for each listed subcontractor. Cupples and Sons Construction's bid protest alleges that DMR Builders' failed to name a subcontractor for the roofing and painting, as required by the project's technical specifications sections 08-41-13 and 08-51-13. Both the protest and DMR Builder's response are timely under the City's bid protest procedure.

On August 25, 2024, DMR Builders responded to the protest (Attachment 4). DMR Builders contend that they intend to self-perform the painting and that the proposal from their roofing subcontractor was $15,578.00. This amount is under the one-half of 1 percent requirement to be listed with the prime contractor's bid. DMR Builders provided the estimate from Cortlandt Roofing (Attachment 5) confirming the proposed $15,578 for the roofing portion. DMR Builders have also confirmed that they will self-perform the work listed on the Cortlandt Roofing estimate not included as part of the TPO roof system and roof patching. As a Class B licensed contractor, DMR Builders are authorized to self-perform the scope of work proposed, which falls within the limits permitted by their license classification.

Based on its review of the bid protest, Staff recommends rejecting the bid protest received from Cupples and Sons Construction Inc., waiving the irregularity in their bid, and awarding the bid to DMR Builders, for $3,487,850. The City Council should make its decision based on the evidence and argument presented during the hearing, including the staff recommendation.

As noted in the July 16, 2025, Agenda Summary Report related to this item, the engineer's estimate for the work was $3,776,071, which included a 10% contingency.

Funding for this remodeling project will primarily come from the Series 2020A Lease Revenue Bonds, with an available balance of approximately $1.3 million. The remaining funds will be sourced from the Series 2022 Lease Revenue Bonds, a $15 million general fund obligation bond originally issued to support the Corporation Yard capital project.

Recommended Action: Consider the bid protest submitted by Cupples and Sons Construction Inc., reject the protest, accept the counterprotest from DMR Builders, waive the irregularity in DMR Builder's bid, and award the contract to the lowest responsible bidder, DMR Builders, in the amount of $3,487,850 for Specification No. 25-04, Remodel of 501 South State Street.

BUDGET AMENDMENT REQUIRED: No

CURRENT BUDGET AMOUNT: 20824700.80220.18176: $4,500,000

PROPOSED BUDGET AMOUNT: N/A

FINANCING SOURCE: Series 2020A Lease Revenue Bond (Community Facilities Improvement Project) and Series 2022 Lease Revenue Bond (Capital Projects)

REVENUE: Yes / No GRANT: Yes / No N/A

PREVIOUS CONTRACT/PURCHASE ORDER NO.: N/A

COORDINATED WITH: Matt Keizer, Chief Building Official; Mary Horger, Assistant Finance Director

STRATEGIC PLAN (SP): N/A

CLIMATE INITIATIVES (CI): N/A

GENERAL PLAN ELEMENTS (GP): GP-A4 - Public Facilities, Services, and Infrastructure Element, Implementation Programs PFS-6.4 Energy Efficient Municipal Buildings and PFS-8.2 Sustainable Design and Energy Efficiency.

Approved: Sage Sangiacomo, City Manager

CITY OF UKIAH

MENDOCINO COUNTY, CALIFORNIA

SPECIAL PROVISIONS

FOR

REMODEL OF 501 SOUTH STATE STREET

SPECIFICATION NO. 25-04

MANDATORY PRE-BID MEETING
10:00 A.M., AUGUST 5, 2025
501 SOUTH STATE STREET
UKIAH, CALIFORNIA 95482

CITY OF UKIAH
DEPARTMENT OF COMMUNITY DEVELOPMENT
300 Seminary Avenue
Ukiah, California 95482-5400

Bids Open: **August 19, 2025**
2:00 p.m.
Office of City Clerk

CITY OF UKIAH

MENDOCINO COUNTY, CALIFORNIA

CITY COUNCIL:

DOUGLAS CRANE – MAYOR

SUSAN SHER – VICE-MAYOR

JUAN OROZCO – COUNCIL MEMBER

HEATHER CRISS – COUNCIL MEMBER

MARI RODIN– COUNCIL MEMBER

SAGE SANGIACOMO – CITY MANAGER

TIM ERIKSEN - DIRECTOR OF PUBLIC WORKS / CITY ENGINEER

KRISTINE LAWLER – CITY CLERK

R. ALLEN CARTER - CITY TREASURER

CITY OF UKIAH
DEPARTMENT OF COMMUNITY DEVELOPMENT
JULY 2025

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CITY OF UKIAH, MENDOCINO COUNTY, CALIFORNIA
NOTICE TO BIDDERS FOR
REMODEL OF 501 SOUTH STATE STREET SPECIFICATION NO. 25-04

NOTICE IS HEREBY GIVEN that sealed standard proposals for REMODEL OF 501 SOUTH STATE STREET will be received at the Office of the City Clerk, Ukiah Civic Center, 300 Seminary Avenue, Ukiah California until 2:00 p.m. on Tuesday, August 19, 2025. Bids shall be addressed to the City Clerk and shall be endorsed "REMODEL OF 501 SOUTH STATE STREET" Bids are required for the entire work described herein. No fax bids will be accepted. As soon thereafter as possible, the bids will be publicly opened and read in the Council Chambers at 300 Seminary Avenue, Ukiah. The bid opening will also be visible via live streaming at http://www.cityofukiah.com/meetings/.

ENGINEER'S ESTIMATE OF QUANTITIES

Item No.	Description	Quantity	Unit of Measure
1	Temporary Controls, Fencing & Signage	1	LS
2	Mobilization	1	LS
3	Div 02 - Demolition	1	LS
4	Div 03 - Concrete	1	LS
5	Div 05 - Metal Fabrications	1	LS
6	Div 06 - Wood	1	LS
7	Div 07 - Insulation & Waterproofing	1	LS
8	Div 08 - Doors & Windows	1	LS
9	Div 09 - Finishes	1	LS
10	Div 10 - Signage & Accessories	1	LS
11	Div 13 - Non-Structural Seismic Restraints	1	LS
12	Div 14 - Elevator	1	LS
13	Div 21 - Wet Pipe Sprinkler Systems	1	LS
14	Div 22 - Plumbing	1	LS
15	Div 23 - Mechanical	1	LS
16	Div 26 - Electrical	1	LS
17	Div 28 - Access Control	1	LS
18	Div 31 - Earthwork	1	LS
19	Div 32 - Site Improvements	1	LS
20	Div 33 - Sanitary Sewer	1	LS

BID ALTERNATES

Item No.	Description	Quantity	Unit of Measure
A1	New Transformer - including Demo of Existing Transformer & Site Work	1	LS

The Engineer's Estimate for this project is $3,776,071. The City provides this information for reference purposes only and does not guarantee its accuracy or completeness. Actual bids may vary based on market conditions and project-specific factors. However, staff believes that actual project costs will likely be lower than the engineer's estimate. Bidders are encouraged to conduct independent evaluations of the project requirements and relevant factors. The City is not responsible for reliance on the estimate, and bidders are responsible for determining the scope and costs in preparing their bids.

Plans and Special Provisions may be inspected and/or copies obtained from the City's website at www.cityofukiah.com/purchasing. No bid will be considered unless it is made on the forms furnished by the City and is made in accordance with the details of the Special Provisions. Each bidder must be licensed as required by law. Further information regarding the work or these specifications can be obtained by calling Myles Fisette, Purchasing Manager at (707) 463-6225 or by email at mfisette@cityofukiah.com.

MANDATORY PRE-BID MEETING will be held at 10:00 a.m., August 5, 2025 at 501 South State Street, Ukiah, California 95482.

The City Council reserves the right to reject any or all bids and to determine which proposal is, in its opinion, the lowest responsive bid by a responsible bidder and which it deems in the best interest of the City to accept. The City Council also reserves the right, but not the obligation, to waive any irregularity or failure to strictly comply with the bidding requirements, that the City determines in the reasonable exercise of its discretion does not provide the bidder with a competitive advantage over other bidders.

No contractor or subcontractor may be listed on a bid proposal for a public works unless registered with the Department of Industrial Relations ("DIR") pursuant to Labor Code section 1725.5 except as allowed. under Labor Code section 1771.1(a). The prime contractor shall be responsible for posting job site notices as prescribed by regulation. This project is subject to compliance monitoring and enforcement by the DIR.

Pursuant to provisions of Section 1770, including amendments thereof, of the Labor Code of the State of California, the DIR Director has ascertained the general prevailing rate of wages for straight time, overtime, Saturdays, Sundays and Holidays including employer payment for health and welfare, vacation, pension and similar purposes for the City of Ukiah. Copies of his General Prevailing Wage Determination are available on the Internet at web address: http://www.dir.ca.gov/DLSR/PWD/ The prime contractor for the work herein shall possess a current, valid State of California, Class B - General Building Contractor's License. Pursuant to California Public Contract Code §22300, this contract includes provisions that allow substitutions of certain types of securities in lieu of the City withholding a portion of the partial payments due the Contractor to insure performance under this contract.

By order of the City Council, City of Ukiah, County of Mendocino, State of California.

Dated: 7/17/25

Kristine Lawler, City Clerk, City of Ukiah, California

PUBLISH ONE TIME: JULY 24, 2025

INSTRUCTIONS TO BIDDERS

REMODEL OF 501 SOUTH STATE STREET shall be performed in accordance with the Plans and Special Provisions therefore adopted, to which special reference is hereby made.

Each bidder must supply all the information required by the bid documents and Special Provisions.

Minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color or national origin in consideration for an award of any contract entered into pursuant to this advertisement. Women will be afforded equal opportunity in all areas of employment. However, the employment of women shall not diminish the standards or requirements for the employment of minorities.

All proposals or bids shall be accompanied by a cashier's check or certified check payable to the order of the City of Ukiah amounting to 10 percent of the bid, or by a bond in said amount and signed by the bidder and a corporate surety, payable to said City. Said check shall be forfeited, or said bond shall become payable to said City in case the bidder depositing the same does not, within fifteen (15) days after written notice that the contract has been awarded to him: (a) enter into a contract with the City and (b) furnish certificates of insurance and endorsements, a bond of faithful performance and a payment bond as described in the Special Provisions.

No bidder shall withdraw his or her bid for a period of thirty (30) calendar days after the date set by the City for the opening thereof.

The Contractor and any subcontractors shall each possess a valid City of Ukiah Business License prior to the start of any work.

The Contractor shall furnish a project schedule to the Engineer prior to the start of any work and start work as scheduled.

The work is to be completed within TWO HUNDRED AND FORTY (240) working days. The Contractor will pay to the City the sum of five hundred ($500.00) dollars per day for each and every calendar day's delay beyond the time prescribed.

The staff shall notify a bidder by telephone, email or fax, if it intends to recommend the rejection of the bidder’s bid. Any bid protest must be filed with the City Clerk not more than five calendar days following the bid opening, or 2 calendar days following notice that staff is recommending the rejection of a bid. If any such timely written protest is filed, all bidders shall be provided a copy of the protest within 2 calendar days of its receipt, which may be delivered to the bidders as an email attachment or by fax. All such bidders may file with the City Manager a written objection or other response to the protest.

All objections or responses filed not more than 5 days after receipt of the written protest will be presented to the City Council at its next regular meeting occurring not less than 12 calendar days following the bid opening. The City Council will resolve the bid protest at that meeting based on the written protest, any staff recommendation and all timely written objections and responses. In accordance with the Brown Act, any person may address the City Council on this item during the meeting. The City Council action on the protest shall represent a final decision by the City on the protest.

Examination of Site, Drawings, Etc.

Each bidder shall visit the site of the proposed work and fully acquaint himself with local conditions, construction and labor required so that he or she may fully understand the facilities, difficulties and restrictions attending the execution of the work under the Contract. Bidders shall thoroughly examine and be familiar with the Plans and Special Provisions. The failure of any bidder to receive or examine any form, instrument, addendum, or other document, or to visit the site and acquaint himself with conditions there existing, shall in no way relieve the bidder from any obligation with respect to his or her proposal or to the contract. The drawings for the work show conditions as they are supposed or believed by the Engineer to exist; but, it is neither intended nor shall it be inferred that the conditions as shown thereon constitute a representation by the Engineer, the City or its officers that such conditions are actually existent, nor shall the City, the Engineer or any of their officers or representatives

be liable for any loss sustained by the Contractor as a result of a variance between the conditions shown on the drawings and the conditions actually revealed during the progress of the work or otherwise.

The bidder's attention is directed to the possible existence of obstructions and public improvements within the limits of the work or adjacent thereto, which may or may not be shown on the Drawings. Any bid shall take into consideration that conditions may exist underground or otherwise that are not known to the City or easily detected during a site inspection that could impact the time or cost of completing the project. The City expects the bids to anticipate such conditions so that it can know for budgeting and other purposes the total cost to complete the project before accepting a bid and undertaking the legal obligation to construct the project. In awarding the contract the City relies on the contractor's representation that its bid anticipates differing site conditions and the additional time or cost that such conditions may necessitate.

The bidder shall investigate to his or her satisfaction the conditions to be encountered, the character, quality and quantities of work to be performed and materials to be furnished and the requirements of the Plans, Special Provisions, Standard Specifications, Standard Plans, and Contract Documents. The submission of a proposal shall be considered conclusive evidence that the bidder has made such examination and has accepted the project workplace as a safe workplace to perform the work of the Contract.

Bidder Inquiries and Questions

Inquiries and questions must be submitted in writing via email to the following designated contact person:

Myles Fisette, Purchasing Manager
Email: mfisette@cityofukiah.com

The City reserves the right to not respond to inquiries or questions submitted within 3 business days of the bid opening.

Location of the Work

All of the work to be performed is within the City of Ukiah. Project is located at 501 South State Street Ukiah, CA 95482.

GENERAL CONDITIONS

SECTION 1. PROPOSAL REQUIREMENTS AND GENERAL CONDITIONS

1-01. Definitions. Whenever any word or expression defined in this section, or pronoun used in its stead, occurs in these contract documents, it shall have and is mutually understood to have the meaning given:

a. "City of Ukiah" or "City" shall mean the City of Ukiah, Mendocino County, California, acting through its City Council or any other board, body, official or officials to which or to whom the power belonging to the Council shall by virtue of any act or acts, hereafter pass or be held to appertain.

b. "Engineer" shall mean the Engineer duly and officially appointed by the City to supervise and direct the work of construction under this contract, acting personally or through agents or assistants duly authorized by him, such agents or assistants acting within the scope of the particular duties entrusted to them.

c. "Inspector" shall mean the engineering or technical inspector or inspectors duly authorized or appointed by the Engineer, limited to the particular duties entrusted to him or her or them.

d. "Contractor" shall mean the party entering into contract with the City of Ukiah for the performance of work covered by this contract and his or her authorized agents or legal representatives.

e. "Date of signing of contract" or words equivalent thereto, shall mean the date upon which this contract, with the signature of the Contractor affixed, together with the prescribed bonds, shall be or shall have been delivered to the City or its duly authorized representatives.

f. "Day" or "days", unless herein otherwise expressly defined, shall mean a calendar day or days of twenty-four hours each.

g. "The work" shall mean and include all the work specified, indicated, shown or contemplated in the contract to construct the improvement, including all alterations, amendments or extensions thereto made by contract change order or other written orders of the Engineer.

h. "Contract drawings", "drawings", "plans" shall mean and include 1) all drawings or plans which may have been prepared by or on behalf of the City, as a basis for proposals, when duly signed and made a part of this contract by incorporation or reference, 2) all drawings submitted in pursuance of the terms of this contract by the successful bidder with his or her proposal and by the Contractor to the City if and when approved by the Engineer and 3) all drawings submitted by the Engineer to the Contractor during the progress of the work as provided for herein.

i. Where "as shown", "as indicated", "as detailed" or words of similar import are used, it shall be understood that reference to the drawings accompanying these Special Provisions is made unless stated otherwise.

Where "as directed", "as permitted", "approved" or words of similar import are used, it shall be understood that the direction, requirements, permission, approval or acceptance of the Engineer is intended unless stated otherwise.

As used herein, "provide" or "install" shall be understood to mean "provide or install complete in place", that is, "furnish and install". "Shall" is mandatory; "may" is permissive.

1-02. Examination of Plans, Special Provisions and Site of Work. The bidder shall examine carefully the Proposal, Plans, Special Provisions, Contract forms and the site of the work contemplated therefor. It will be assumed that the bidder has investigated to his or her satisfaction the conditions to be encountered and the character, quality and requirements of all Plans, Special Provisions, Standard Specifications, and Standard Plans involved.

1-03. Proposal. Bids shall be made on the blank forms prepared by the City. All bids shall give the prices bid, both in writing and in figures and shall be signed by the bidder or his or her authorized representative, with his or

her address. If the bid is made by an individual or partner, his or her name and the post office address of his or her business or partnership, along with his or her signature or the signature of one or more partners must be shown; if made by a corporation, the bid shall show the name of the state under the laws of which the corporation is chartered, the name of the corporation and the title of the person who signs on behalf of the corporation.

Each proposal shall be enclosed in a sealed envelope, endorsed as specified in the notice to bidders. Bidders are warned against making erasures or alterations of any kind and proposals which contain omissions, erasures, conditions, alterations, additions not called for, additional proposals or irregularities of any kind may be rejected.

1-04. Withdrawal of Bids. Any bid may be withdrawn at any time prior to the hour fixed in the notice to bidders for the openings of bids, provided that a request in writing, executed by the bidder or his or her duly authorized representative, for the withdrawal of such bid is filed with the City. The withdrawal of a bid will not prejudice the right of a bidder to file a new bid.

1-05. Public Opening of Bids. Bids will be opened and read publicly at the time and place indicated in the notice to bidders. Bidders or their agents are invited to be present.

1-06. Bid Guaranty. Each bid must be accompanied by a certified check, cashier's check or bidder's bond executed by an admitted surety insurer, payable to the order of the City of Ukiah in an amount not less than 10 percent of the bid as a guarantee that the bidder will enter into a contract, if awarded the work.

1-07. Qualification of Bidders. No contractor or subcontractor may be listed on a bid proposal for a public works project (submitted on or after March 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5 [with limited exceptions from this requirement for bid purposes only under Labor Code section 1771.1(a)]. No contractor or subcontractor may be awarded a contract for public work on a public works project (awarded on or after April 1, 2015) unless registered with the Department of Industrial Relations pursuant to Labor Code section 1725.5. The prime contractor shall be responsible for posting job site notices as prescribed by regulation. This project is subject to compliance monitoring and enforcement by the Department of Industrial Relations.

Each bidder shall be licensed under the provisions of Chapter 9, Division 3 of the Business and Professions Code and shall be skilled and regularly engaged in the general class or type of work called for under this contract. A statement setting forth this experience and business standing shall be submitted by each bidder on the form provided herewith. It is the intention of the City to award a contract only to a bidder who furnishes satisfactory evidence that he or she has the requisite experience and ability and that he or she has sufficient capital, facilities and equipment to enable him or her to prosecute the work successfully and promptly within the time and in the manner agreed.

In determining the degree of responsibility to be credited to a bidder, the City may weigh evidence that the bidder or his or her personnel charged with the responsibility in the work, has performed satisfactorily other contracts of like nature and magnitude or comparable difficulty at similar rates of progress.

1-08. Disqualification of Bidders. More than one bid from an individual business, partnership, corporation or association, under the same or different names, will not be considered. Reasonable grounds for believing that any bidder is financially interested in more than one bid for the work will cause the rejection of all bids in which he or she is so interested. If there is reason to believe that collusion exists among the bidders, none of the participants in such collusion will be considered. Bids in which the prices obviously are unbalanced may be rejected.

1-09. Identification of Subcontractors. All bids shall comply with the Subletting and Subcontracting Fair Practices Act (Public Contract Code Section 4100 and following) and shall set forth:

(a) The name and the location of the place of business of each subcontractor who will perform work or labor, or render service to the prime contractor in or about the construction of the work, or to a subcontractor licensed by the State of California who, under subcontract to the prime contractor, specially fabricates and installs a portion of the work according to detailed drawings contained in the plans and Special Provisions, in an amount in excess of one-half of 1 percent of the prime contractor's total bid.

(b) The portion of the work which will be done by each such subcontractor. The prime contractor shall list only one subcontractor for each such portion defined by the prime contractor in his or her bid.

1-10. General Provisions of the Standard Specifications. All provisions of the General Provisions, Sections 1 through 11, of the Standard Specifications, shall be applicable to the contract except as modified by these Special Provisions. The Standard Specifications are set forth in Section 12-06 of these Special Provisions.

1-11. Addenda. If it becomes necessary to revise any part of these plans and specifications after they have been released, the City will issue an addendum containing the revision. All addenda will be posted on the City's website at www.cityofukiah.com/purchasing with the rest of the bid documents. Anyone who intends to submit a bid in response to this Request for Bid must check the website frequently for any posted addenda. Anyone submitting a bid will be deemed to have seen and agreed to be bound by the posted addenda.

SECTION 2. AWARD AND EXECUTION OF CONTRACT

2-01. Award of Contract. Award of the contract, if it be awarded, will be to the lowest responsible bidder whose bid complies with all the specified requirements. The award, if made, will be made within thirty (30) days after opening of the bids. The City reserves the right to reject any and all bids and to waive any irregularity in the proposal not pertaining to cost.

2-02. Return of Proposal Guaranties. All bid guaranties will be held until the contract has been fully executed, after which they will be returned upon request to the respective bidders whose bids they accompany.

2-03. Execution of Contract. The contract agreement shall be executed in duplicate by the successful bidder and returned, together with the contract bonds, insurance certificates and endorsements, within fifteen (15) days after written notice of the award of the contract. After execution by the City; one copy shall be filed with the City and one copy shall be returned to the Contractor. If the bidder fails or refuses to enter into the contract agreement within the required time, then the bid guaranty accompanying the bid shall be forfeited to the City.

SECTION 3. SCOPE AND INTENT OF CONTRACT

3-01. Effect of Inspection and Payments. Neither the inspection by the Engineer or an inspector, nor any order, measurement or approved modification, nor certificate or payment of money, nor acceptance of any part or whole of the work, nor any extension of time, nor any possession by the City or its agents, shall operate as a waiver of any provision of this contract or of any power reserved therein to the City, or of any right to damages thereunder; nor shall any breach of this contract be held to be a waiver of any subsequent breach. All remedies shall be construed as cumulative.

3-02. Effect of Extension of Time. The granting of any extension of time on account of delays which, in the judgement of the City, are avoidable delays shall in no way operate as a waiver on the part of the City of its rights under this contract.

3-03. Extra Work. If extra work orders are given in accordance with provisions of this contract, such work shall be considered a part hereof and shall be subject to each and all of its terms and requirements.

3-04. Assignment of Contract. The contract may be assigned or sublet in whole or in part only upon the written consent of the City acting through its authorized agents. Consent will not be given to any proposed assignment which would relieve the original contractor or its surety of their responsibilities under the contract nor will the Engineer consent to any assignment of a part of the work under the contract.

3-05. Subcontractors. The Contractor shall be as fully responsible for the acts and omissions of his or her subcontractors and of persons either directly or indirectly employed by them, as he or she is for the acts and omissions of persons directly employed by him.

The Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the work to bind subcontractors to the terms of this Contract which are applicable to the work of subcontractors.

Nothing contained in this contract shall be construed to create or shall be relied upon to create any contractual relationship between any subcontractor and the City and no action may be brought by any subcontractor against the City based on this contract.

3-06. Interpretation of Special Provisions and Drawings. The Special Provisions and the Contract Drawings are intended to be explanatory of each other. Any work indicated in the Contract Drawings and not in the Special Provisions, or vice versa, is to be executed as if indicated in both. In case of a discrepancy or conflict between the Technical Specifications and Contract Plans, the Technical Specifications shall govern. All work shown on the Contract Drawings, the dimensions of which are not figured, shall be accurately followed to the scale to which the drawings are made, but figured dimensions are in all cases to be followed, where given, though they differ from scaled measurements. Large scale drawings shall be followed in preference to small scale drawings. Should it appear that the work to be done, or any of the matters relative thereto, are not sufficiently detailed or explained in these contract documents, including the contract drawings, the Contractor shall apply to the Engineer for such further explanations as may be necessary and shall conform thereto as part of this contract, so far as may be consistent with the terms of this contract. In the event of any doubt or questions arising respecting the true meaning of the Special Provisions, reference shall be made to the Engineer and his or her decision thereon shall be final. If the Contractor believes that a clarification or interpretation justifies an increase in the contract price or contract time, the Contractor must comply with the written notice provisions of Sections 9-05 and 10-07 of these Special Provisions. Contractor's attention is directed to Section 12-06 of the Technical Specifications regarding the Standard Specifications and Standard Plans.

3-07. Addenda. If it becomes necessary to revise any part of these plans and specifications after they have been released, the City will issue an addendum containing the revision. All addenda will be posted on the City's website at www.cityofukiah.com/purchasing with the rest of the bid documents. Anyone who intends to submit a bid in response to this Request for Bid must check the website frequently for any posted addenda. Anyone submitting a bid will be deemed to have seen and agreed to be bound by the posted addenda.

3-08. Liability of City Officials. No city official, nor the Engineer, nor any authorized assistant of any of them, shall be personally responsible for any liability arising under this contract.

3-09. Dispute Resolution. Claims of $375,000 or less by the Contractor that arise under this Contract are subject to the mandatory dispute resolutions provisions in Public Contract Code Sections 20104-20104.6.

SECTION 4. BONDS

4-01. Faithful Performance Bond. As a part of the execution of this contract, the Contractor shall furnish a bond of a surety company or other securities providing equivalent protection such as cash, letter of credit, or certificates of deposit, acceptable to the City, conditioned upon the faithful performance of all covenants and stipulations under this contract. The amount of the bond shall be 100 percent of the total contract price, as this sum is set forth in the agreement.

4-02. Material and Labor Bond. As a part of the execution of this contract, the Contractor shall furnish a bond of a surety company or other securities providing equivalent protection such as cash, letter of credit or certificates of deposit acceptable to the City in a sum not less than 50 percent of the total contract price, as this sum is set forth in the agreement for the payment in full of all persons, companies or corporations who perform labor upon or furnish materials to be used in the work under this contract, in accordance with the provisions of Sections 3247 through 3252 inclusive of the Civil Code of the State of California and any acts amendatory thereof.

4-03. Defective Material and Workmanship Bond. As a condition precedent to the completion of this contract, the Contractor shall furnish a bond of a surety company acceptable to the City in an amount not less than 5 percent (5%) of the final contract price, to hold good for a period of one (1) year after the completion and acceptance of the work, to protect the City against the results of defective materials, workmanship and equipment during that time. This bond shall be delivered to the City before the final payment under this contract will be made.

4-04. Notification of Surety Companies. The surety companies shall familiarize themselves with all of the conditions and provisions of this contract and they waive the right of special notification of any change or modification of this contract or of extension of time, or decreased or increased work, or of the cancellation of the contract, or of any other act or acts by the City or its authorized agents, under the terms of this contract; and failure to so notify the aforesaid surety companies of changes shall in no way relieve the surety companies of their obligation under this contract.

SECTION 5. INSURANCE REQUIREMENTS FOR CONTRACTORS (WITH CONSTRUCTION RISKS)

Contractor shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the Contractor, his or her agents, representatives, employees or subcontractors.

5-01. Minimum Scope of Insurance

Coverage shall be at least as broad as:

1. Insurance Services Office Commercial Liability Coverage (occurrence form CG 0001).
2. Insurance Services Office form number CA 0001 (Ed. 1/87) covering Automobile Liability, code 1 (any auto).
3. Worker's Compensation insurance as required by the State of California and Employer's Liability Insurance.
4. Course of Construction insurance covering for “all risks” of loss.

5-02. Minimum Limits of Insurance

Contractor shall maintain limits no less than:

1. General Liability: $2,000,000 per occurrence for bodily injury, personal injury and property damage including operations, products and completed operations. If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit.

2. Automobile Liability: $2,000,000 per accident for bodily injury and property damage.

3. Employer's Liability: $1,000,000 per accident for bodily injury and property damage.

4. Course of Construction: Completed value of the project with no co-insurance penalty provisions.

5-03. Deductibles and Self-insured Retentions. Any deductibles or self-insured retentions must be declared to and approved by the City. At the option of the City, either: the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the City, its officers, officials, employees and volunteers; or the Contractor shall provide a financial guarantee satisfactory to the City guaranteeing payment of losses and related investigations, claim administration and defense expenses.

5-04. Other Insurance Provisions

The general liability and automobile liability policies are to contain, or be endorsed to contain, the following provisions:

1. The City, its officers, officials, employees and volunteers are to be covered as Additional Insured with respect to liability arising out of automobiles owned, leased, hired or borrowed by or on behalf of the contractor; and with respect to liability arising out of work or operations performed by or on behalf of the Contractor including materials, parts or equipment furnished in connection with such work or operations. General liability coverage can be provided in the form of an endorsement to the Contractor's insurance, or as a separate owner's policy.

2. The workers’ compensation policy is to be endorsed with a waiver of subrogation. The insurance company, in its endorsement, agrees to waive all rights of subrogation against the City, its officers,

officials, employees and volunteers for losses paid under the terms of this policy which arises from the work performed by the named insured for the City.

3. For any claims related to this project, the Contractor's insurance coverage shall be primary insurance as respects the City, its officers, officials, employees or volunteers. Any insurance or self-insurance maintained by the City, its officers, officials, employees or volunteers shall be excess of the Contractor's insurance and shall not contribute with it.

4. Each insurance policy required by this clause shall be endorsed to state that coverage shall not be canceled by either party, except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to the City.

5. Coverage shall not extend to any indemnity coverage for the active negligence of the additional insured in any case where an agreement to indemnify the additional insured would be invalid under Subdivision (b) of Section 2782 of Civil Code.

6. Course of Construction policies shall contain the following provisions:
   a.) The City shall be named as loss payee.
   b.) The insurer shall waive all rights of subrogation against the City.

5-05. Acceptability of Insurers

Insurance is to be placed with insurers with a current A.M. Best's rating of no less than the following:

A++ VII	A- VIII
A+ VII	B++ X
A VII	B+ X

5-06. Verification of Coverage. Contractor shall furnish the City with original certificates and amendatory endorsements effecting coverage required by this clause. The endorsements shall be on forms provided by the City or on other than the City's forms, provided those endorsements or policies conform to the requirements. All certificates and endorsements are to be received within 15 days from written notice of contract award, and the work shall not commence until the certificates and endorsements have been approved by the City. The City reserves the right to require complete certified copies of all required insurance policies, including endorsements affecting the coverage required by these Special Provisions at any time.

5-07. Subcontractors. Contractor shall include all subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverages for subcontractors shall be subject to all of the requirements stated herein.

SECTION 6. RESPONSIBILITIES AND RIGHTS OF CONTRACTOR

6-01. Legal Address of Contractor. Both the address given in the proposal and the Contractor's office in the vicinity of the work are hereby designated as places to either of which drawings, samples, notices, letters or other articles or communications to the Contractor may be mailed or delivered. The delivery at either of these places of any such thing from the City or its agents to the Contractor shall be deemed sufficient service thereof upon the Contractor and the date of such service shall be the date of such delivery. The address named in the proposal may be changed at any time by notice in writing from the Contractor to the City. Nothing herein contained shall be deemed to preclude or render inoperative the service of any drawing, sample, notice, letter or other article or communication to or upon the Contractor personally.

6-02. Office of Contractor at Site. During the performance of this contract, the Contractor shall maintain a suitable office at the site of the work which shall be the headquarters of a representative authorized to receive drawings and any such thing given to the said representatives or delivered at the Contractor's office at the site of work in his or her absence shall be deemed to have been given to the Contractor.

6-03. Attention to Work. The Contractor shall give his or her personal attention to and shall supervise the work to the end that it shall be prosecuted faithfully and when he or she is not personally present on the work, he or she shall at all reasonable times be represented by a competent superintendent or foreman who shall receive and obey all instructions or orders given under this contract and who shall have full authority to execute the same and to supply materials, tools and labor without delay and who shall be the legal representative of the Contractor. The Contractor shall be liable for the faithful observance of any instructions delivered to him or her or to his or her authorized representative.

6-04. Liability of Contractor. The Contractor shall do all of the work and furnish all labor, materials, tools and appliances, except as otherwise herein expressly stipulated, necessary or proper for performing and completing the work herein required in the manner and within the time herein specified. The mention of any specific duty or liability imposed upon the Contractor shall not be construed as a limitation or restriction of any general liability or duty imposed upon the Contractor by this contract, said reference to any specific duty or liability being made herein merely for the purpose of explanation.

The right of general supervision by the City shall not make the Contractor an agent of the City and the liability of the Contractor for all damages to persons or to public or private property, arising from the Contractor's execution of the work, shall not be lessened because of such general supervision.

Until the completion and final acceptance by the City of all the work under and implied by this contract, the work shall be under the Contractor's responsible care and charge. The Contractor shall rebuild, repair, restore and make good all injuries, damages, re-erections and repairs, occasioned or rendered necessary by causes of any nature whatsoever, excepting only acts of God and none other, to all or any portions of the work, except as otherwise stipulated.

To the fullest extent permitted by law, Contractor shall indemnify and hold harmless the City and its officers, directors, agents and employees from and against all claims, damages, losses and expenses including but not limited to attorneys' fees, costs of suit, expert witness fees and expenses and fees and costs of any necessary private investigators arising out of or resulting from the performance of the work, provided that any such claim, damage, loss or expense (1) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property, other than the work itself, including the loss of use resulting therefrom and (2) is caused in whole or in part by any act or omission of the Contractor, any subcontractor, or anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder, or by the negligence or omission of a party indemnified herein.

In any and all claims against the City or any of its agents or employees by any employee of the Contractor, any subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under workers' or workmen's compensation acts, disability benefit acts, or other employee benefit acts. The obligation to indemnify shall extend to and include acts of the indemnified party which may be negligent or omissions which may cause negligence.

The City shall have the right to estimate the amount of such damage and to cause the City to pay the same and the amount so paid for such damage shall be deducted from the money due the Contractor under this contract; or the whole or so much of the money due or to become due the Contractor under this contract as may be considered necessary by the City, shall be retained by the City until such suits or claims for damages shall have been settled or otherwise disposed of and satisfactory evidence to that effect furnished to the City.

6-05. Protection of Persons and Property. The Contractor shall furnish such watchman, guards, fences, warning signs, walks and lights as shall be necessary and shall take all other necessary precautions to prevent damage or injury to persons or property.

All property line fences and improvements in the vicinity of the work shall be protected by the Contractor and, if they are injured or destroyed, they and any other property injured by the Contractor, his or her employees or agents, shall be restored to a condition as good as when he or she entered upon the work.

6-06. Protection of City Against Patent Claims. All fees, royalties or claims for any patented invention, article or method that may be used upon or in any manner connected with the work under this contract shall be included in the price bid for the work and the Contractor and his or her sureties shall protect and hold the City, together with all of its officers, agents, servants and employees, harmless against any and all demands made for such fees or claims brought or made on account of this contract. The Contractor shall, if requested by the Engineer, furnish acceptable proof of a proper release from all such fees or classes.

Should the Contractor, his or her agents, servants or employees, or any of them be enjoined from furnishing or using any invention, article, material or appliance supplied or required to be supplied or used under this contract, the Contractor shall promptly substitute other articles, materials or appliance, in lieu thereof, of equal efficiency, quality, finish, suitability and market value and satisfactory in all respects to the Engineer. Or, in the event that the Engineer elects, in lieu of such substitution, to have supplied and to retain and use, any such invention, article, material or appliance, as may by this contract be required to be supplied, in that event the Contractor shall pay such royalties and secure such valid licenses as may be requisite and necessary for the City, its officers, agents, servants and employees, or any of them, to use such invention, article, material or appliance without being disturbed or in any way interfered with by any proceeding in law or equity on account thereof. Should the Contractor neglect or refuse to make the substitution promptly, or to pay such royalties and secure such licenses as may be necessary, then in that event the Engineer shall have the right to make such substitution, or the City may pay such royalties and secure such licenses and charge the cost thereof against any money due to the Contractor from the City or recover the amount thereof from him or her and his or her sureties notwithstanding final payment under this contract may have been made.

6-07. Protection of Contractor's Work Property. The Contractor shall protect his or her work, supplies and materials from damage due to the nature of the work, the action of the elements, trespassers, or any cause whatsoever under his or her control, until the completion and acceptance of the work. Neither the City nor any of its agents assumes any responsibility for collecting indemnity from any person or persons causing damage to the work of the Contractor.

6-08. Regulations and Permits. The Contractor shall secure and pay for all permits, give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the work as drawn and specified. If the Contractor observes that the Plans and Special Provisions are at variance therewith, he or she shall promptly notify the Engineer in writing and any necessary changes shall be adjusted as provided in the contract for changes in the work. The contractor and any subcontractors shall each secure and maintain a valid City of Ukiah Business License. The City of Ukiah will issue a no fee encroachment permit to the Contractor allowing him or her to perform work within City right of way or within City property after the Contract Documents have been executed and insurance certificates and endorsements have been approved by the City.

6-09. Construction Utilities. The Contractor shall be responsible for providing for and in behalf of his or her work under this contract, all necessary utilities, such as special connection to water supply, telephones, power lines, fences, roads, watchmen, suitable storage places, etc.

6-10. Approval of Contractor's Plans. The approval by the Engineer of any drawing or any method of work proposed by the Contractor in accordance with paragraph 8-06 shall not relieve the Contractor of any of his or her responsibility for his or her errors therein and shall not be regarded as any assumption of risk or liability by the City or any officer or employee thereof and the Contractor shall have no claim under this contract on account of the failure or partial failure or inefficiency of any plan or method so approved. Such approval shall be considered to mean merely that the Engineer has no objection to the Contractor's using, upon his or her own full responsibility the plan or method approved.

6-11. Suggestions to the Contractor. Any plan or method of work suggested by the Engineer to the Contractor, but not specified or required, if adopted or followed by the Contractor in whole or in part, shall be used at the risk and responsibility of the Contractor; and the Engineer and the City shall assume no responsibility thereof.

6-12. Termination of Unsatisfactory Subcontracts. Should any subcontractor fail to perform in a satisfactory manner the work undertaken by him, such subcontract shall be terminated immediately by the Contractor upon notice from the Engineer.

6-13. Preservation of Stakes and Marks. The Contractor shall preserve carefully bench marks, reference points and stakes and in case of destruction he or she shall replace his or her stakes, reference points and bench marks

and shall be responsible for any mistakes that may be caused by their unnecessary loss or disturbance. Contractor's attention is directed to Section 7-03 of these Special Provisions.

6-14. Assistance to Engineer. At the request of the Engineer the Contractor shall provide men from his or her force and tools, stakes and other materials to assist the Engineer temporarily in making measurements and surveys and in establishing temporary or permanent reference marks. Payment for such materials and assistance will be made as provided for under the caption "Extra Work," provided, however, that the cost of setting stakes and marks carelessly lost or destroyed by the Contractor's employees will be assessed to the Contractor.

6-15. Removal of Condemned Materials and Structures. The Contractor shall remove from the site of the work, without delay, all rejected and condemned materials or structures of any kind brought to or incorporated in the work and upon his or her failure to do so, or to make satisfactory progress in so doing, within forty-eight (48) hours after the service of a written notice from the Engineer, the condemned material or work may be removed by the City and the cost of such removal shall be taken out of the money that may be due or may become due the Contractor on account of or by virtue of this contract. No such rejected or condemned material shall again be offered for use by the Contractor under this Contract.

6-16. Proof of Compliance with Contract. In order that the Engineer may determine whether the Contractor has complied with the requirements of this contract, not readily enforceable through inspection and tests of the work and materials, the Contractor shall, at any time when requested, submit to the Engineer properly authenticated documents or other satisfactory proofs as to his or her compliance with such requirements.

6-17. Errors and Omissions. If the Contractor, in the course of the work, finds any errors or omissions in plans or in the layout as given by survey points and instruction, or if he or she finds any discrepancy between the plans and the physical conditions of the locality, he or she shall immediately inform the Engineer, in writing and the Engineer shall promptly verify the same. Any work done after such discovery, until authorized, will be done at the Contractor's risk.

6-18. Cooperation. The Contractor shall cooperate with all other contractors who may be performing work in behalf of the City and workmen who may be employed by the City on any work in the vicinity of the work to be done under this contract with the work of such contractors or workmen. he or she shall make good promptly, at his or her own expense, any injury or damage that may be sustained by other contractors or employees of the City at his or her hands.

Any difference or conflict which may arise between the Contractor and other contractors, or between the contractor and workmen of the City in regard to their work shall be adjusted and determined by the Engineer. If the work of the Contractor is delayed because of any acts or omissions of any other contractor or of the City, the Contractor shall on that account have no claim against the City other than for an extension of time.

6-19. Right of Contractor to Stop Work. Under the following conditions the Contractor shall have the right, if he or she so desires, to stop the work and terminate the contract upon ten (10) days written notice to the Engineer and recover from the City payment for all work actually performed and for all satisfactory materials actually delivered to the site of the work for permanent incorporation therein, all as may be shown by the estimate of the Engineer.

(1) If the work is stopped under an order of any court or other competent public authority for a period of time of three (3) months through no act or fault of the Contractor or of anyone employed by him.

(2) If the Engineer fails to issue the monthly certificate for payment in accordance with the terms of this contract.

(3) If the City fails to pay the Contractor within sixty (60) days after it shall have become due, as provided by the terms of this contract, any sum certified by the Engineer or awarded by the City.

All provided that if such action to terminate the contract be not instituted by the Contractor within ten (10) days after the alleged existence of such condition and if written notice of such action be not at that time delivered to the City and the Engineer, then such right shall lapse until another occasion arises according to this section.

6-20. Hiring and Dismissal of Employees. The Contractor shall employ only such foremen, mechanics and laborers as are competent and skilled in their respective lines of work and whenever the Engineer shall notify the Contractor that any person on the work is, in his or her opinion, incompetent, unfaithful, intemperate or disorderly, or refuses to carry out the provisions of this contract, or uses threatening or abusive language to any person on the work representing the City, or is otherwise unsatisfactory, such person shall be discharged immediately from the work and shall not be re-employed upon it except with the consent of the Engineer.

6-21. Wage Rates.

1. Contractor shall pay all mechanics and laborers employed or working upon the site of the work unconditionally and without subsequent deductions or rebate on any account the full amounts due at the time of payment at wage rates not less than those contained in the applicable prevailing wage determination, regardless of any contractual relationship which may be alleged to exist between the Contractor and subcontractors and such laborers and mechanics.

2. Contractor shall comply with the California Labor Code Section 1775. In accordance with said Section 1775, Contractor shall forfeit as a penalty to the Owner, $50.00 (or the higher minimum penalty as provided in Section 1775(B)(ii) – (iii)) for each calendar day or portion thereof, for each workman paid less than the stipulated prevailing rates for such work or craft in which such workman is employed for any work done under the Contract by him or her or by any subcontractor under him or her in violation of the provisions of the Labor Code and in particular, Labor Code Sections 1770 to 1780, inclusive. In addition to said penalty and pursuant to Section 1775, the difference between such stipulated prevailing wage rates and the amount paid to each workman for each calendar day or portion thereof for which each workman was paid less than the stipulated prevailing wage rate shall be paid to each workman by the Contractor.

3. Pursuant to the provision of Section 1770 of the Labor Code of the State of California, Owner has ascertained the general prevailing rate of wages (which rate includes employer payments for health and welfare, vacation, pension and similar purposes) applicable to the work to be done, for straight time work. The holiday wage rate listed shall be applicable to all holidays recognized in the collective bargaining agreement of the particular craft, classification or type of workmen concerned. Copies of the General Prevailing Wage Determination are available on the Internet at web address: http://www.dir.ca.gov/DLSR/PWD The Contractor shall post the wage determination at the site of work in a prominent place where it can easily be seen by the workers.

4. City will not recognize any claim for additional compensation because the Contractor has paid any rate in excess of the prevailing wage rate obtained by the Contractor. The possibility of wage increases is one of the elements to be considered by the Contractor in determining his or her bid and will not in any circumstances be considered as the basis for a claim against the City.

5. The Labor Commissioner through the Division of Labor Standards Enforcement (DLSE) may at any time require contractors and subcontractors to furnish electronic certified payroll records directly to DLSE. Commencing with contracts awarded or after April 1, 2015, all contractors and subcontractors must furnish electronic certified payroll records directly to the DLSE.

6. Travel and Subsistence Payments.

   Contractor shall make travel and subsistence payments to each workman needed to execute the work in accordance with the requirements in Section 1773.8 of the Labor Code (Chapter 880, Statutes of 1968).

7. Apprentices.

   Attention is directed to the provisions in Sections 1777.5 (Chapter 1411, Statutes of 1968) and 1777.6 of the California Labor Code concerning the employment of apprentices by the Contractor or any subcontractor under him. Contractor and any subcontractor under him or her shall comply with the requirements of said sections in the employment of apprentices.

Information relative to apprenticeship standards, wage schedules and other requirements may be obtained from the Director of Industrial Relations, ex officio the Administrator of Apprenticeship, San Francisco, California, or from the Division of Apprenticeship Standards and its branch offices.

6-22. Cleaning Up. The Contractor shall not allow the site of the work to become littered with trash and waste material, but shall maintain the same in a neat and orderly condition throughout the construction period. The Engineer shall have the right to determine what is or is not waste material or rubbish and the place and manner of disposal.

On or before the completion of the work, the Contractor shall without charge therefore carefully clean out all pits, pipes, chambers or conduits and shall tear down and remove all temporary structures built by him or her and shall remove rubbish of all kind from any of the grounds which he or she has occupied and leave them in first class condition.

6-23. Guaranty. All work shall be guarantied for a period of one year from the date of acceptance by the City. The Contractor shall promptly make all needed repairs arising out of defective materials, workmanship and equipment.

The City is hereby authorized to make such repairs if within ten days after the mailing of a notice in writing to the Contractor or his or her agent, the Contractor shall neglect to make or undertake with due diligence the aforesaid repairs, provided, however, that in case of an emergency where, in the opinion of the City delay would cause serious loss or damage, repairs may be made without notice being sent to the Contractor and the Contractor shall pay the costs thereof.

Pursuant to the provisions of Section 4-03 of these Special Provisions, the Contractor shall furnish a Defective Material and Workmanship Bond in an amount not less than 5 percent of the final contract price, which shall be effective for a period of one (1) year after the completion and acceptance of the work.

SECTION 7. RESPONSIBILITIES AND RIGHTS OF CITY

7-01. Authority of the Engineer. All work done under this contract shall be done in a workmanlike manner and shall be performed to the reasonable satisfaction of the Engineer, who shall have general supervision of all work included hereunder. To prevent disputes and litigation, the Engineer (1) shall in all cases determine the amount, quality, acceptability and fitness of the several kinds of work and materials which are to be paid for under this contract, (2) shall decide all questions relative to the true construction, meaning and intent of the Special Provisions and Drawings, (3) shall decide all questions which may arise relative to the classifications and measurements of quantities and materials and the fulfillment of this contract and (4) shall have the power to reject or condemn all work or material which does not conform to the terms of this contract. his or her estimate and decision in all matters shall be a condition precedent to an appeal for arbitration, or the right of the Contractor to receive, demand, or claim any money or other compensation under this agreement and a condition precedent to any liability on the part of the City to the Contractor on account of this contract. Whenever the Engineer shall be unable to act, in consequence of absence or other cause, then such engineer as the Engineer or the City shall designate, shall perform any and all of the duties and be vested with any or all of the powers herein given to the Engineer.

7-02. Inspection. The City will provide engineering personnel for the inspection of the work.

The Engineer and his or her representatives shall at all times have access to the work whenever it is in preparation or progress and the Contractor shall provide proper facilities for such access and inspection.

If the Special Provisions, the Engineer's instruction, laws, ordinances, or any public authority require any work to be specially tested or approved, the Contractor shall give the Engineer timely notice of its readiness for inspection and, if the inspection is by an authority other than the Engineer, of the date fixed for such inspection. Inspections by the Engineer shall be promptly made at the source of supply where practicable. If any work shall be covered up without approval or consent of the Engineer, it must, if required by the Engineer, be uncovered for examination and properly restored at the Contractor's expense.

Re-examination of any work may be ordered by the Engineer and, if so ordered, the work must be uncovered by the Contractor. If such work is found to be in accordance with the contract documents, the City shall pay the cost of

re-examination and replacement. If such work is not in accordance with the contract documents, the Contractor shall pay such cost.

Properly authorized and accredited inspectors shall be considered to be the representatives of the City limited to the duties and powers entrusted to them. It will be their duty to inspect materials and workmanship of those portions of the work to which they are assigned, either individually or collectively, under instructions of the Engineer and to report any and all deviations from the Drawings, Special Provisions and other contract provisions which may come to their notice. Any inspector may be considered to have the right to order the work entrusted to his or her supervision stopped, if in his or her opinion such action becomes necessary, until the Engineer is notified and has determined and ordered that the work may proceed in due fulfillment of all contract requirements.

7-03. Surveys. Contractor shall furnish all land surveys, establish all base lines and bench marks and make sufficient detailed surveys needed for working points, lines and elevations. The Contractor shall develop all slope stakes and batter boards. Contractor shall also develop all additional working points, lines and elevations as he or she may desire to facilitate his or her methods and sequence of construction.

7-04. Rights-of-Way. The City will provide all necessary rights-of-way and easements in or beneath which work will be performed by the Contractor under this contract.

7-05. Retention of Imperfect Work. If any portion of the work done or material furnished under this contract shall prove defective and not in accordance with the Plans and Special Provisions, and if the imperfection in the same shall not be of sufficient magnitude or importance to make the work dangerous or undesirable, the Engineer shall have the right and authority to retain such work instead of requiring the imperfect work to be removed and reconstructed, but he or she shall make such deductions therefor in the payments due or to become due the Contractor as may be just and reasonable.

7-06. Changes in the Work. The Engineer shall have the right, in writing, to order additions to, omissions from, or corrections, alterations and modifications in the line, grade, form, dimensions, plan, or kind or amount of work or materials herein contemplated, or any part thereof, either before or after the beginning of construction. However, the arithmetical sum of the cost to the City of additions and subtractions from the work under this contract shall not exceed 10 percent of original contract amount or $10,000, whichever is the greater, unless based upon a supplementary agreement to be made therefore.

The order of such additions, omissions, corrections, alterations and modifications shall be in writing and signed by the Engineer and, in order, shall then be binding upon the Contractor. The Contractor shall proceed with the work as changed and the value of such change shall be determined as provided for in section 10-07 of these Special Provisions.

Such alterations shall in no way affect, vitiate, or make void this contract or any part thereof, except that which is necessarily affected by such alterations and is clearly the evident intention of the parties to this contract.

7-07. Additional Drawings by City. The drawings made a part of this contract at the time of its execution are intended to be fairly comprehensive and to indicate in more or less detail the scope of the work. In addition to these drawings, however, the Engineer shall furnish such additional drawings from time to time during the progress of the work as are necessary to make clear or to define in greater detail the intent of the Special Provisions and the contract drawings and the Contractor shall make his or her work conform to all such drawings.

7-08. Additional and Emergency Protection. Whenever, in the opinion of the Engineer, the Contractor has not taken sufficient precautions for the safety of the public or the protection of the works to be constructed under this contract, or of adjacent structures or property which may be injured by the processes of construction on account of such neglect and whenever, in the opinion of the Engineer, an emergency shall arise and immediate action shall be considered necessary in order to protect public or private, personal or property interest, then and in that event, the Engineer, with or without notice to the Contractor may provide suitable protection to the said interests by causing such work to be done and such material to be furnished as shall provide such protection as the Engineer may consider necessary and adequate.

The cost and expense of such work and material so furnished shall be borne by the Contractor and, if the same shall not be paid on presentation of the bills therefor, then such costs shall be deducted from any amounts due or to become due the Contractor.

The performance of such emergency work under the direction of the Engineer shall in no way relieve the Contractor from any damages which may occur during or after such precaution has been taken by the Engineer.

7-09. Suspension of Work. The City may at any time suspend the work or any part thereof by giving five (5) days written notice to the Contractor. The work shall be resumed by the Contractor within ten (10) days after the date fixed in the written notice from the City to the Contractor so to do. The City shall reimburse the Contractor for expense incurred by the Contractor in connection with the work under this contract as a result of such suspension.

If the work, or any part thereof, shall be stopped by the notice in writing aforesaid and if the City does not give notice in writing to the Contractor to resume work at a date within ten (10) days of the date fixed in the written notice to suspend, then the Contractor may abandon that portion of the work so suspended and he or she will be entitled to the estimates and payments for all work done on the portions so abandoned, if any, plus 5 percent of the value of the work so abandoned, to compensate for loss of overhead, plant expense and anticipated profit.

7-10. Right of City to Terminate Contract. If the Contractor should be adjudged a bankrupt, or if he or she should make a general assignment for the benefit of his or her creditors, or if a receiver should be appointed on account of his or her insolvency, or if he or she should persistently or repeatedly refuse or should fail, except in cases for which extension of time is provided, to supply sufficient properly skilled workmen or proper materials, or if he or she should fail to make prompt payments to subcontractors or for material or labor, or persistently disregard laws, ordinances or the instructions of the Engineer, or otherwise be guilty of a substantial violation of any provision of the contract, then the City, upon the certificate of the Engineer that sufficient cause exists to justify such action, may, without prejudice to any other right or remedy and after giving the Contractor seven days written notice, terminate the employment of the Contractor and take possession of the premises and of all materials, tools and appliances and finish the work by whatever method the City may deem expedient. In such case, the Contractor shall not be entitled to receive any further payment until the work is finished. If the unpaid balance of the contract price shall exceed the expense of finishing the work, including compensation for additional managerial and administrative services, such excess shall be paid to the Contractor. If such expense shall exceed such unpaid balance, the Contractor shall pay the difference to the City. The expense incurred by the City as herein provided and the damage incurred through the Contractor's default, shall be certified by the Engineer. In the event that a termination under this section is determined to be improper, such termination shall be deemed a constructive termination for convenience taken pursuant to section 7-12 below.

7-11. Use of Completed Portions. The City shall have the right to take possession of and use any completed or partially completed portions of the work, notwithstanding the time for completing the entire work or such portions which may not have expired; but such taking possession and using shall not be deemed an acceptance of any work not completed in accordance with the contract documents. If such prior use increases the cost of or delays the work, the Contractor shall be entitled to such extra compensation, or extension of time or both, as the Engineer may determine.

7-12. **Right of City to Terminate Contract for Convenience**. The City may terminate performance of the work called for by the contract documents in whole or, from time to time, in part, if the City determines that a termination is in the City's best interest. The Contractor shall terminate all or any part of the work upon delivery to the Contractor of a notice of termination specifying that the termination is for the convenience of the City, the extent of termination, and the effective date of such termination. After receipt of notice of termination, and except as directed by the Engineer, the Contractor shall, regardless of any delay in determining or adjusting any amounts due under this termination for convenience clause, immediately proceed with the following obligations:

1. Stop work as specified in the notice.
2. Complete any work specified in the notice of termination in a least cost/shortest time manner while still maintaining the quality called for under the contract documents.
3. Leave the property upon which the Contractor was working and upon which the facility (or facilities) forming the basis of the contract documents is situated in a safe and sanitary manner such that it does not pose any threat to the public health or safety.
4. Terminate all subcontracts to the extent that they relate to the portions of the work terminated.
5. Place no further subcontracts or orders, except as necessary to complete the continued portion of the contract.
6. Submit to the Engineer, within ten (10) calendar days from the effective date of the notice of termination, all of the usual documentation called for by the contract documents to substantiate all costs incurred by the Contractor for labor, materials and equipment through the effective date of the notice of termination.

Any documentation substantiating costs incurred by the Contractor solely as a result of the City's exercise of its right to terminate this Contract pursuant to this clause, which costs the contractor is authorized under the contract documents to incur, shall: (1) be submitted to and received by the Engineer no later than 30 calendar days after the effective date of the notice of termination; (2) describe the costs incurred with particularity; and (3) be conspicuously identified as “Termination Costs occasioned by the City's Termination for Convenience.”

Termination of the contract shall not relieve Surety of its obligation for any just claims arising out of or relating to the work performed. In the event that the City exercises its right to terminate this contract pursuant to this clause, the City shall pay the Contractor, upon the Contractor's submission of the documentation required by this clause and other applicable provisions of the contract documents, the following amounts:

All actual reimbursable costs incurred according to the provisions of this contract.

1. A reasonable allowance for profit on the cost of the Work performed, provided Contractor establishes to the satisfaction of the Engineer that it is reasonably probable that Contractor would have made a profit had the contract been completed and provided further, that the profit allowed shall in no event exceed fifteen (15%) percent of the costs.
2. A reasonable allowance for Contractor's administrative costs in determining the amount payable due to termination of the contract under this Article.

Notwithstanding any other provision of this Article, when immediate action is necessary to protect life and safety or to reduce significant exposure or liability, the City may immediately order Contractor to cease work on the project until such safety or liability issues are addressed to the satisfaction of the City or the contract is terminated.

SECTION 8. WORKMANSHIP, MATERIALS and EQUIPMENT

8-01. General Quality. Materials and equipment shall be new and of a quality equal to that specified or approved. Work shall be done and completed in a thorough and workmanlike manner.

8-02. Quality in Absence of Detailed Specifications. Whenever under this contract it is provided that the Contractor shall furnish materials or manufactured articles or shall do work for which no detailed specifications are set forth, the materials or manufactured articles shall be of the best grade in quality and workmanship obtainable in the market from firms of established good reputation, or, if not ordinarily carried in stock, shall conform to the usual standards for first-class materials or articles of the kind required, with due consideration of the use to which they are to be put. In general, the work performed shall be in full conformity and harmony with the intent to secure the best standard of construction and equipment of the work as a whole or in part.

8-03. Materials and Equipment Specified by Name. Whenever any material or equipment is indicated or specified by patent or proprietary name or by the name of the manufacturer, such specification shall be considered as used for the purpose of describing the material or equipment desired and shall be considered as followed by the words "or approved equal". The Contractor may offer any material or equipment which shall be equal in every respect to that specified, provided that written approval first is obtained from the Engineer.

8-04. Source of Materials. Price, fitness and quality being equal, preference shall be given by the Contractor for supplies grown, manufactured or produced in the State of California and, next, for such products partially produced in this State in accordance with Government Code Section 4332.

8-05. Storage of Materials. Materials shall be so stored to ensure the preservation of their quality and fitness for the work. They shall be so located and disposed that prompt and proper inspection thereof may be made.

8-06. Drawings, Samples and Tests. As soon as possible after execution of the contract, the Contractor shall submit to the Engineer, in quintuplicate, sufficient information including, if necessary, assembly and detail drawings to demonstrate fully that the equipment and materials to be furnished comply with the provisions and intent of these Special Provisions and Drawings. If the information thus submitted indicates the equipment or materials is acceptable, the Engineer will return one copy stamped with his or her approval; otherwise, one copy will be returned with an explanation of why the equipment or material is unsatisfactory. The Contractor shall have no claims for damages or for extension of time on account of any delay due to the revision of drawings or rejection of material. Fabrication or other work performed in advance of approval shall be done entirely at the Contractor's risk. After approval of equipment or material, the Contractor shall not deviate in any way from the design and specifications given without the written consent of the Engineer.

When requested by the Engineer, a sample or test specimens of the materials to be used or offered for use in connection with the work shall be prepared at the expense of the Contractor and furnished by him or her in such quantities and sizes as may be required for proper examination and tests, with all freight charges prepaid and with information as to their sources.

All samples shall be submitted before shipment and in ample time to permit the making of proper tests, analyses, or examination before the time at which it is desired to incorporate the material into the work. All tests of materials furnished by the Contractor shall be made by the Engineer. Samples shall be secured and tested whenever necessary to determine the quality of the material.

SECTION 9. PROSECUTION OF WORK

9-01. Equipment and Methods. The work under this contract shall be prosecuted with all materials, tools, machinery, apparatus and labor and by such methods as are necessary to the complete execution of everything described, shown, or reasonably implied. If at any time before the beginning or during the progress of the work, any part of the Contractor's plant or equipment, or any of his or her methods of execution of the work, appear to the Engineer to be unsafe, inefficient, or inadequate to insure the required quality or the rate of progress of the work, he or she may order the Contractor to increase or improve his or her facilities or methods and the Contractor shall comply promptly with such orders; but, neither compliance with such orders nor failure of the Engineer to issue such orders shall relieve the Contractor from his or her obligation to secure the degree of safety, the quality of the work and the rate of progress required of the Contractor. The Contractor alone shall be responsible for the safety, adequacy and efficiency of his or her plant, equipment and methods.

9-02. Time of Completion. The Contractor shall promptly begin the work under this contract and shall complete and make ready for full use all portions of the project made the subject of this contract within the time set forth in the agreement bound herewith.

9-03. Avoidable Delays. Avoidable delays in the prosecution or completion of the work shall include all delays which might have been avoided by the exercise of care, prudence, foresight and diligence on the part of the Contractor. The City will consider as avoidable delays within the meaning of this contract (1) delays in the prosecution of parts of the work, which may in themselves be unavoidable, but do not necessarily prevent or delay the prosecution of other parts of the work nor the completion of the whole work within the time herein specified, (2) reasonable loss of time resulting from the necessity of submitting plans to the Engineer for approval and from the making of surveys, measurements, inspections, and testing and (3) such interruptions as may occur in the prosecution of the work on account of the reasonable interference of other contractors employed by the City which do not necessarily prevent the completion of the whole work within the time herein specified.

9-04. Unavoidable Delays. Unavoidable delays in the prosecution or completion of the work under this contract shall include all delays which may result, through cause beyond the control of the Contractor and which he or she could not have provided against by the exercise of care, prudence, foresight and diligence. Orders issued by the City changing the amount of work to be done, the quantity of material to be furnished or the manner in which the work is to be prosecuted and unforeseen delays in the completion of the work of other contractors under contract with the City will be considered unavoidable delays, so far as they necessarily interfere with the Contractor's completion of the whole of the work. Delays due to normally adverse weather conditions will not be regarded as unavoidable delays. However, truly abnormal amounts of rainfall, temperatures or other weather conditions for the location of the work and time of year may be considered as unavoidable delays if those conditions necessarily cause a delay in the completion of the work.

9-05. Notice of Delays. Whenever the Contractor foresees any delay in the prosecution of the work and, in any event, immediately upon the occurrence of any delay which the contractor regards as an unavoidable delay, he or she shall notify the Engineer in writing of the probability of the occurrence of such delay and its cause, in order that the Engineer may take immediate steps to prevent, if possible, the occurrence or continuance of the delay, or, if this cannot be done, may determine whether the delay is to be considered avoidable or unavoidable, how long it continues and to what extent the prosecution and completion of the work are to be delayed thereby.

9-06. Extension of Time. Should any delays occur which the Engineer may consider unavoidable, as herein defined, the Contractor shall, pursuant to his or her application, be allowed an extension of time proportional to said delay or delays, beyond the time herein set forth, in which to complete this contract; and liquidated damages for delay shall not be charged against the Contractor by the City during an extension of time granted because of unavoidable delay or delays.

Any claim by Contractor for a time extension based on unavoidable delays shall be based on written notice delivered to the Engineer within 15 days of the occurrence of the event giving rise to the claim. Failure to file said written notice within the time specified shall constitute a waiver of said claim. Notice of the full extent of the claim and all supporting data must be delivered to the Engineer within 45 days of the occurrence unless the Engineer specifies in writing a longer period. All claims for a time extension must be approved by the Engineer and incorporated into a written change order.

9-07. Unfavorable Weather and Other Conditions. During unfavorable weather and other conditions, the Contractor shall pursue only such portions of the work as shall not be damaged thereby. No portions of the work whose satisfactory quality or efficiency will be affected by any unfavorable conditions shall be constructed while these conditions remain, unless, by special means or precautions approved by the Engineer, the Contractor shall be able to overcome them.

The Contractor shall be granted a time extension of one day for each unfavorable weather day which prevents him or her from placing concrete forms or placing and finishing concrete or asphalt concrete. Such unfavorable weather day is defined as a rain day where precipitation prevents the contractor from performing the work more than four (4) continuous hours within the authorized work period or a temperature day where the ambient temperature is below that specified for the placement of materials associated with the controlling work item for more than four (4) continuous work hours of the authorized work period.

9-08. Saturday, Sunday, Holiday and Night Work. No work shall be done between the hours of 6 p.m. and 7 a.m., nor on Saturdays, Sundays or legal holidays except such work as is necessary for the proper care and protection of work already performed, or except in cases of absolute necessity and in any case only with the permission of the Engineer.

It is understood, however, that night work may be established as a regular procedure by the Contractor if he or she first obtains the written permission of the Engineer and that such permission may be revoked at any time by the Engineer if the Contractor fails to maintain at night adequate force and equipment for reasonable prosecution and to justify inspection of the work.

9-09. Hours of Labor. Eight (8) hours of labor shall constitute a legal day's work and the Contractor or any subcontractor shall not require or permit more than eight hours of labor in a day from any person employed by him or her in the performance of the work under this contract, unless paying compensation for all hours worked in excess of eight (8) hours per day at not less than 1½ times the basic rate of pay. The Contractor shall forfeit to the City, as a penalty, the sum of twenty-five dollars ($25.00) for each workman employed in the execution of the contract by him or her or by any subcontractor, for each calendar day during which such laborer, workman, or mechanic is required or permitted to labor more than eight hours in violation of the provisions of Section 1810 to 1816, inclusive, (Article 3, Chapter 1, Part 7, Division 2) of the Labor Code of the State of California and any acts amendatory thereof.

SECTION 10. PAYMENT

10-01. Certification by Engineer. All payments under this contract shall be made upon the presentation of certificates in writing from the Engineer and shall show that the work covered by the payments has been done and the payments thereof are due in accordance with this contract.

10-02. Progress Estimates and Payment. The Engineer shall, within the first seven (7) days of each month, make an estimate of the value of the work performed in accordance with this contract during the previous calendar month.

The first estimate shall be of the value of the work satisfactorily completed in place and meeting the requirements of the contract. And every subsequent estimate, except the final estimate, shall be of the value of the work satisfactorily completed in place since the last preceding estimate was made; provided, however, that should the

Contractor fail to adhere to the program of completion fixed in this contract, the Engineer shall deduct from the next and all subsequent estimates the full calculated accruing amount of the liquidated damages to the date of said estimate, until such time as the compliance with the program has been restored.

The estimate shall be signed by the Engineer and, after approval, the City shall pay or cause to be paid to the Contractor in the manner provided by law, an amount equal to 95 percent of the estimated value of the work satisfactorily performed and complete in place.

10-03. Substitution of Securities.

1. At such times that Pubic Contract Code Section 22300 is in effect Contractor may propose the substitution of securities of at least equal market value for any moneys to be withheld to ensure performance under the Contract. Market value shall be determined as of the day prior to the date such substitution is to take place. Such substitution shall be made at the request and expense of the Contractor. The securities shall be one or more of the following types:

(a) Bonds or interest-bearing notes or obligations of the United States, or those for which the faith and credit of the United States are pledged for the payment of principal and interest.

(b) Bonds or interest-bearing notes on obligations that are guaranteed as to principal and interest by a federal agency of the United States.

(c) Bonds of the State of California, or those for which the faith and credit of the State of California are pledged for the payment of principal and interest.

(d) Bonds or warrants, including, but not limited to, revenue warrants, of any county, city, metropolitan water district, California water district, California water storage district, irrigation district in the State of California, municipal utility district, or school district of the State of California, which are rated by Moody's or Standard and Poor as A or better.

(e) Bonds, consolidated bonds, collateral trust debentures, consolidated debentures, or other obligations issued by federal land banks or federal intermediate credit banks established under the Federal Farm Loan Act, as amended; debentures and consolidated debentures issued by the Central Bank for Cooperatives and banks for cooperatives established under the Farm Credit Act of 1933, as amended; bonds, or debentures of the Federal Home Loan Bank Board established under the Federal Home Loan Bank Act; and stock, bonds, debentures and other obligations of the Federal National Mortgage Association established under the National Housing Act as amended and bonds of any Federal Home Loan Mortgage Corporation.

(f) Commercial paper of "prime" quality as defined by a nationally recognized organization which rates such securities. Eligible paper is further limited to issuing corporations: (1) organized and operating within the United States; (2) having total assets in excess of five hundred million dollars ($500,000,000); and (3) approved by the Pooled Money Investment Board of the State of California. Purchases of eligible commercial paper may not exceed 180 days' maturity, nor represent more than 10 percent of the outstanding paper of an issuing corporation.

(g) Bills of exchange or time drafts on and accepted by a commercial bank, otherwise known as bankers acceptances, which are eligible for purchase by the Federal Reserve System.

(h) Certificates of deposits issued by a nationally or state-chartered bank or savings and loan association.

(i) The portion of bank loans and obligations guaranteed by the United States Small Business Administration or the United States Farmers Home Administration.

(j) Student loan notes insured under the Guaranteed Student Loan Program established pursuant to the Higher Education Act of 1965, as amended (20 U.S.C. 1001, et seq.) and eligible for resale to the Student Loan Marketing Association established pursuant to Section 133 of the Education Amendments of 1972, as amended (20 U.S.C. 1087-2).

(k) Obligations issued, assumed or guaranteed by International Bank for Reconstruction and Development, the Inter-American Development Bank, the Asian Development Bank, or the Government Development Bank of Puerto Rico.

(l) Bonds, debentures and notes issued by corporations organized and operating within the United States. Such securities eligible for substitution shall be within the top three ratings of a nationally recognized rating service.

2. The securities shall be deposited with City or with any commercial bank as escrow agent, who shall arrange for transfer of such securities to the Contractor upon satisfactory completion of the contract. Any interest accrued or paid on such securities shall belong to the Contractor and shall be paid upon satisfactory completion of the contract.

The market value of the securities deposited shall at all times be maintained in an amount at least equal, in the sole judgment of City, to the moneys to be withheld pursuant to the Contract Documents to ensure performance of the Contract. In order to comply with this condition, Contractor shall deposit additional securities as necessary upon request by City or the escrow agent.

3. Upon acceptance of any Proposal that includes substituting securities for amounts withheld to ensure performance, a separate escrow agreement satisfactory in form and substance to City shall be prepared and executed by City, the Contractor and the escrow agent, which may be City. The escrow agreement shall specify, among other matters, value of securities to be deposited; procedures for valuing the securities and for adding or withdrawing securities to maintain the market value of the deposited securities at least equal to the amount of moneys which would otherwise be withheld; the terms and conditions of conversion to cash in case of the default by the Contractor; and terms, conditions and procedure for termination of the escrow. City shall have no obligation to enter any such Agreement that does not provide the City with the unilateral right to convert securities to cash and to gain immediate possession of the cash.

10-04. Acceptance. The work must be accepted by vote of the City Council of the City of Ukiah when the whole shall have been completed satisfactorily. The Contractor shall notify the Engineer, in writing, of the completion of the work, whereupon the Engineer shall promptly, by personal inspection, satisfy himself as to the actual completion of the work in accordance with the terms of the contract and shall thereupon recommend acceptance by the City Council.

10-05. Final Estimate and Payment. The Engineer shall, as soon as practicable after the final acceptance of the work done under this contract, make a final estimate of the amount of work done thereunder and the value thereof.

Such final estimate shall be signed by the Engineer, and after approval, the City shall pay or cause to be paid to the Contractor, in the manner provided by law, the entire sum so found to be due hereunder, after deducting therefrom all previous payments and such other lawful amounts as the terms of this contract prescribe.

In no case will final payment be made in less than thirty-five (35) days after the filing of the notice of completion with the County Recorder.

10-06. Delay Payments. Should any payment due the Contractor or any estimate be delayed, through fault of the City beyond the time stipulated, such delay shall not constitute a breach of contract or be the basis for a claim for damages, but the City shall pay the Contractor interest on the amount of the payment at the rate of 6 percent per annum for the period of such delay. The terms for which interest will be paid shall be reckoned, in the case of any monthly or progress payment, from the twentieth day of the month next succeeding the month in which the work was performed to the date of payment of the estimate; and in the case of the final estimate, from the forty-fifth day after acceptance to the date of payment of the final estimate.

The date of payment of any estimate shall be considered the day on which the payment is offered or mailed as evidenced by the records of the Treasurer of the City. If interest shall become due on any delayed payment, the amount thereof, as determined by the City, shall be added to a succeeding payment. If the interest shall become due on the final payment, it shall be paid on a supplementary voucher to interest or any sum or sums which, by the terms of this contract, the City is authorized to reserve or retain.

10-07. Extra Work and Work Omitted. Whenever corrections, alterations, or modifications of the work under this contract ordered by the Engineer and approved by the City increase the amount of work to be done, such added work shall be known as "extra work"; and when such corrections, alterations, or modifications decrease the amount of work to be done, such subtracted work shall be known as "work omitted".

When the Contractor considers that any changes ordered involve extra work, he or she shall immediately notify the Engineer in writing and subsequently keep him or her informed as to when and where extra work is to be performed and shall make claim for compensation therefor each month not later than the first day of the month following that in which the work claimed to be extra work was performed and he or she shall submit a daily complete statement of materials and labor used and expenses incurred on account of extra work performed, showing allocation of all materials, labor and expenses.

All such claims shall state the date of the Engineer's written order and the date of approval by the City authorizing the work on account of which claim is made. Unless such notification is made in writing within the time specified and unless complete statements of materials used and expenses incurred on account of such extra work are furnished as above required, the Contractor shall not be entitled to payment on account of extra work and Contractor shall be deemed to have waived the right to make any future claims for compensation for such extra work.

When changes decrease the amount of work to be done, they shall not constitute a claim for damages on account of anticipated profits on the work that may be omitted.

10-08. Compensation for Extra Work or Work Omitted. Whenever corrections, additions, or modifications in the work under this contract change the amount of work to be done or the amount of compensation due the Contractor, excepting increases or decreases in contract items having unit contract prices for each measurable quantity installed in place, and such changes have been ordered in writing by the Engineer and approved by the City prior to the Contractor performing the extra work, then a price may be agreed upon. Failing such an agreement in price, the Contractor shall be compensated for performing extra work pursuant to the provisions of Section 4-1.03 D,"Extra Work", and Section 9-1.03,"Force Account Payment" of the Standard Specifications.

This method of determining the price of work shall not apply to the performance of any work which is required or reasonably implied to be performed or furnished under this contract.

10-09. Compensation to the City for Extension of Time. In case the work called for under this contract is not completed within the time limit stipulated herein, the City shall have the right as provided hereinabove, to extend the time of completion thereof. If the time limit be so extended, the City shall have the right to charge to the Contractor and to deduct from the final payment for the work the actual cost to the City of engineering, inspection, superintendence and other overhead expenses which are directly chargeable to the contract and which accrue during the period of such extension, except that the cost of final unavoidable delays shall not be included in such charges.

10-10. Liquidated Damages for Delay. It is agreed by the parties to the contract that time is of the essence and that, in case all the work is not completed before or upon the expiration of the time limit as set forth, damage, other than those cost items identified in section 10-09, will be sustained by the City and that it is and will be impracticable to determine the actual amount of damage by reason of such delay; and it is therefore agreed that the Contractor will pay to the City the sum of five hundred dollars ($500.00) per day for each and every calendar day's delay beyond the time prescribed.

In compliance with the provisions of California Public Contract Code § 7102, the Contractor will be compensated for damages incurred due to delays in completing the work due solely to the fault of the City, where such delay is unreasonable under the circumstances and not contemplated by the parties. The Contractor and City agree that determining actual damages is impracticable and extremely difficult. As such, the Contractor shall be entitled to the appropriate time extension and to payment of liquidated damages in the sum of $250 per day of delay in excess of the time specified for the completion of the work. Such amount shall constitute the only payment allowed and shall necessarily include all overhead (direct or indirect), all profit, all administrative costs, all bond costs, all labor, materials, equipment and rental costs, and any other costs, expenses and fees incurred or sustained as a result of such delay. The Contractor expressly agrees to be limited solely to the liquidated damages for all such delays as defined in this subsection.

SECTION 11. MISCELLANEOUS

11-01. Notice. Whenever any provision of the contract documents requires the giving of written notice, it shall be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice. If mailed, the notice shall be deemed received on the date of delivery stated in the return receipt.

11-02. Computation of Time. When any period of time is referred to in the Contract Documents by days, it shall be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day shall be omitted from the computation.

11-03. Claims Procedure
Contractor shall timely comply with all notices and requests for changes to the contract time or contract price, as a prerequisite to filing any claim governed by this Article. The failure to timely submit a notice of delay or notice of change, or to timely request a change to the contract time or contract price, or to timely provide any other notice or request required herein shall constitute a waiver of the right to further pursue the claim under the contract or at law.

A. **Intent.** Effective January 1, 1991, Section 20104 et seq., of the California Public Contract Code prescribes a process utilizing informal conferences, non-binding judicial supervised mediation, and judicial arbitration to resolve disputes on construction claims of $375,000 or less. Effective January 1, 2017, Section 9204 of the Public Contract Code prescribes a process for negotiation and mediation to resolve disputes on construction claims. The intent of this Article is to implement Sections 20104 et seq. and Section 9204 of the California Public Contract Code. This Article shall be construed to be consistent with said statutes.

B. **Claims.** For purposes of this Article, “Claim” means a separate demand by the Contractor, for (A) a time extension, (B) payment of money or damages arising from work done by or on behalf of the Contractor pursuant to the Contract, or (C) an amount the payment of which is disputed by the District. Claims governed by this Article may not be filed unless and until the Contractor completes all procedures for giving notice of delay or change and for the requesting of a time extension or change order. Claims governed by this Article must be filed no later than the date of final payment. The claim shall be submitted in writing to the District and shall include on its first page the following in 16 point capital font: “THIS IS A CLAIM.” Furthermore, the claim shall include the documents necessary to substantiate the claim. Nothing herein is intended to extend the time limit or supersede notice requirements otherwise provided by contract for the filing of claims, including all requirements pertaining to compensation or payment for extra work, disputed work, and/or changed conditions. Failure to follow such contractual requirements shall bar any claims or subsequent lawsuits for compensation or payment thereon.

C. **Supporting Documentation.** The Contractor shall submit all claims in the following format:

Summary of claim merit and price, reference Contract Document provisions pursuant to which the claim is made
List of documents relating to claim:
Specifications
Drawings
Clarifications (Requests for Information)
Schedules
Other
Chronology of events and correspondence
Analysis of claim merit
Analysis of claim cost
Time impact analysis in CPM format

If Contractor's claim is based in whole or in part on an allegation of errors or omissions in the Drawings or Specifications for the project, Contractor shall provide a summary of the percentage of the claim subject to design errors or omissions and shall obtain a certificate of merit in support of the claim of design errors and omissions.

D. City's Response. Upon receipt of a claim pursuant to this Article, City shall conduct a reasonable review of the claim and, within a period not to exceed 45 days, shall provide the Contractor a written statement identifying what portion of the claim is disputed and what portion is undisputed. Any payment due on an undisputed portion of the claim will be processed and made within 60 days after the City issues its written statement.

If the City needs approval from its governing body to provide the Contractor a written statement identifying the disputed portion and the undisputed portion of the claim, and the City's governing body does not meet within the 45 days or within the mutually agreed to extension of time following receipt of a claim sent by registered mail or certified mail, return receipt requested, the City shall have up to three days following the next duly publicly noticed meeting of the City's governing body after the 45-day period, or extension, expires to provide the Contractor a written statement identifying the disputed portion and the undisputed portion.

Within 30 days of receipt of a claim, the City may request in writing additional documentation supporting the claim or relating to defenses or claims the District may have against the Contractor. If additional information is thereafter required, it shall be requested and provided pursuant to this subdivision, upon mutual agreement of City and the Contractor. The City's written response to the claim, as further documented, shall be submitted to the Contractor within 30 days (if the claim is less than $15,000, within 15 days) after receipt of the further documentation, or within a period of time no greater than that taken by the Contractor in producing the additional information or requested documentation, whichever is greater.

E. Meet and Confer. If the Contractor disputes the City's written response, or the City fails to respond within the time prescribed, the Contractor may so notify the City, in writing, either within 15 days of receipt of the City's response or within 15 days of the City's failure to respond within the time prescribed, respectively, and demand in writing an informal conference to meet and confer for settlement of the issues in dispute. Upon receipt of a demand, the City shall schedule a meet and confer conference within 30 days for settlement of the dispute.

F. Mediation. Within 10 business days following the conclusion of the meet and confer conference, if the claim or any portion of the claim remains in dispute, the City shall provide the Contractor a written statement identifying the portion of the claim that remains in dispute and the portion that is undisputed. Any payment due on an undisputed portion of the claim shall be processed and made within 60 days after the City issues its written statement. Any disputed portion of the claim, as identified by the Contractor in writing, shall be submitted to nonbinding mediation, with the City and the Contractor sharing the associated costs equally. The City and Contractor shall mutually agree to a mediator within 10 business days after the disputed portion of the claim has been identified in writing, unless the parties agree to select a mediator at a later time.

If the parties cannot agree upon a mediator, each party shall select a mediator and those mediators shall select a qualified neutral third party to mediate with regard to the disputed portion of the claim. Each party shall bear the fees and costs charged by its respective mediator in connection with the selection of the neutral mediator.

For purposes of this section, mediation includes any nonbinding process, including, but not limited to, neutral evaluation or a dispute review board, in which an independent third party or board assists the parties in dispute resolution through negotiation or by issuance of an evaluation. Any mediation utilized shall conform to the timeframes in this section.

Unless otherwise agreed to by the City and the Contractor in writing, the mediation conducted pursuant to this section shall excuse any further obligation under Public Contract Code Section 20104.4 to mediate after litigation has been commenced.

The mediation shall be held no earlier than the date the Contractor completes the work or the date that the Contractor last performs work, whichever is earlier. All unresolved claims shall be considered jointly in a single mediation, unless a new unrelated claim arises after mediation is completed.

G. Procedures After Mediation. If following the mediation, the claim or any portion remains in dispute, the Contractor must file a claim pursuant to Chapter 1 (commencing with Section 900) and Chapter 2 (commencing with Section 910) of Part 3 of Division 3.6 of Title 1 of the Government Code prior to initiating

litigation. For purposes of those provisions, the running of the period of time within which a claim must be filed shall be tolled from the time the Contractor submits his or her written claim pursuant to subdivision (a) until the time the claim is denied, including any period of time utilized by the meet and confer conference.

H. Civil Actions. The following procedures are established for all civil actions filed to resolve claims of $375,000 or less:

Within 60 days, but no earlier than 30 days, following the filing or responsive pleadings, the court shall submit the matter to non-binding mediation unless waived by mutual stipulation of both parties or unless mediation was held prior to commencement of the action in accordance with Public Contract Code section 9204 and the terms of this Contract. The mediation process shall provide for the selection within 15 days by both parties of a disinterested third person as mediator, shall be commenced within 30 days of the submittal, and shall be concluded within 15 days from the commencement of the mediation unless a time requirement is extended upon a good cause showing to the court.

If the matter remains in dispute, the case shall be submitted to judicial arbitration pursuant to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, notwithstanding Section 1114.11 of that code. The Civil Discovery Act of 1986 (Article 3 (commencing with Section 2016) of Chapter 3 of Title 3 of Part 4 of the Code of Civil Procedure) shall apply to any proceeding brought under this subdivision consistent with the rules pertaining to judicial arbitration. In addition to Chapter 2.5 (commencing with Section 1141.10) of Title 3 of Part 3 of the Code of Civil Procedure, (A) arbitrators shall, when possible, be experienced in construction law, and (B) any party appealing an arbitration award who does not obtain a more favorable judgment shall, in addition to payment of costs and fees under that chapter, also pay the attorney's fees on appeal of the other party.

I. Government Code Claims. In addition to any and all contract requirements pertaining to notices of and requests for compensation or payment for extra work, disputed work, construction claims and/or changed conditions, the Contractor must comply with the claim procedures set forth in Government Code Sections 900, et seq. prior to filing any lawsuit against the City. Such Government Code claims and any subsequent lawsuit based upon the Government Code claims shall be limited to those matters that remain unresolved after all procedures pertaining to extra work, disputed work, construction claims, and/or changed conditions have been followed by Contractor. If no such Government Code claim is submitted, or if the prerequisite contractual requirements are not satisfied, no action against the City may be filed. **A Government Code claim must be filed no earlier than the date the work is completed or the date the Contractor last performs work on the project, whichever occurs first. A Government Code claim shall be inclusive of all unresolved claims unless a new unrelated claim arises after the Government Code claim is submitted.**

J. Non-Waiver. The City's failure to respond to a claim from the Contractor within the time periods described in this Article or to otherwise meet the time requirements of this Article shall result in the claim being deemed rejected in its entirety.

11-04. Litigation and Forum Selection. Contractor and City stipulate and agree that any litigation relating to the enforcement or interpretation of this contract, arising out of Contractor's performance or relating in any way to the work shall be brought in Mendocino County and that venue will lie in Mendocino County.

Except as otherwise expressly provided by law, the parties waive any objections they might otherwise have to the propriety of jurisdiction or venue in the state courts in Mendocino County and agree that California law shall govern any such litigation.

The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto and, in particular but without limitation, the warranties, guaranties and obligations imposed upon the Contractor and all of the rights and remedies available to the City thereunder, shall be in addition to and shall not be construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by law or contract, by special warranty or guaranty, or by other provisions of the contract documents and the provisions of this paragraph shall be as effective as if repeated specifically in the

contract documents in connection with each particular duty, obligation, right and remedy to which they apply. All warranties and guaranties made in the contract document shall survive final payment and termination or completion of this contract. The City disclaims an express or implied warranty that the plans and specifications identify all site conditions that could affect the time or cost to complete the Work.

11-05. Waiver. The Contractor shall strictly comply with all notices and other contract requirements. Waiver by the City of any failure of the Contractor to comply with any term of the contract, including the notice provisions, shall not be deemed a waiver of a subsequent breach.

TECHNICAL SPECIFICATIONS

SECTION 12. GENERAL INFORMATION

12-01. Location and Scope of Work. All of the work to be performed is within the City of Ukiah and consists of a comprehensive remodel of the former Bank of America building located at 501 South State Street in Ukiah, California. The remodel will modernize the facility, enhance functionality, and address updates to the interior and exterior spaces. This includes structural improvements, mechanical, electrical, and plumbing upgrades, and refinishing work to ensure the building meets contemporary standards.

The remodel will incorporate the construction of new interior spaces, installation of modern systems, and repair of structural elements to create a functional and aesthetically appealing environment.

The remodel will include the following work:

The existing interior spaces will be upgraded with new restrooms, complete with modern fixtures, partitions, grab bars, and finishes. A new service counter will be installed, designed to enhance customer service and workflow efficiency. Doorways will be reconfigured, with new doors and hardware installed to improve access and functionality throughout the building. The interior will also include a new staff sink in designated areas and the installation of an elevator to provide access between floors. New fire extinguisher cabinets, updated signage throughout the facility, and repairs to interior stairs will ensure compliance with modern standards and improve overall safety. Flooring surfaces throughout the building will be leveled and refinished, providing a smooth and visually appealing result.

Exterior improvements will include upgrades to the site’s parking areas and construction of ramps to enhance access. Grading and paving work will be conducted as needed to address slopes and transitions, ensuring a seamless and updated exterior environment.

Mechanical, electrical, and plumbing work will include updates to plumbing systems with the installation of new domestic water piping, sanitary waste systems, and fixtures. The HVAC system will be modified to accommodate the remodeled layout, with adjustments to ductwork and insulation. Electrical upgrades will involve installing new circuits, wiring, and lighting systems for both the interior and exterior, ensuring sufficient power and lighting throughout the building. Internet access will be provided for new building systems, ensuring connectivity and operational efficiency.

Deferred submittals will include detailed plans for review and approval of specific items such as non-structural seismic supports and systems related to the remodel. All work will be conducted per approved plans, specifications, and applicable building codes, ensuring a high standard of construction quality.

Mock-ups will be provided for review and approval of critical finishes, including paint, tile, and other materials. Inspections will be coordinated at key stages to verify compliance with project specifications. Detailed "as-built" drawings will be maintained, and training manuals for new systems will be provided upon completion. A final walkthrough will confirm compliance with all project requirements, addressing any remaining items on the punch list.

At the conclusion of the project, all required documentation, including warranties, maintenance manuals, and final "as-built" drawings, will be submitted. The site will be turned over in a clean and orderly condition, ensuring the building is fully operational and ready for use as specified.

General locations of the work are 501 South State Street, Ukiah CA 95482.

The Contractor should familiarize himself with the local conditions of the project sites. Failure to do so will in no way relieve him of the responsibility for performing any of the work or operations required as a part of this contract. Further information regarding the work or these specifications can be obtained from Myles Fisette at (707) 463-6225.

12-02. Arrangement of Technical Specifications. The Technical Specifications are provided as Appendix A, arranged in sections covering the various phases of work as follows:

DIVISION 0 – PROCUREMENT AND CONTRACTING REQUIREMENTS
DIVISION 1 – GENERAL REQUIREMENTS
DIVISION 2 – EXISTING CONDITIONS
DIVISION 3 – CONCRETE
DIVISION 4 – MASONRY
DIVISION 5 – METALS
DIVISION 6 – WOOD AND PLASTICS
DIVISION 7 – THERMAL AND MOISTURE PROTECTION
DIVISION 8 – DOORS AND WINDOWS
DIVISION 9 – FINISHES
DIVISION 10 – SPECIALTIES
DIVISION 11 – EQUIPMENT
DIVISION 12 – FURNISHINGS
DIVISION 13 – SPECIAL CONSTRUCTION
DIVISION 14 – CONVEYING SYSTEMS
DIVISION 21 – FIRE SUPPRESSION
DIVISION 22 – PLUMBING
DIVISION 23 – HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)
DIVISION 26 – ELECTRICAL
DIVISION 28 – ELECTRONIC SAFETY AND SECURITY
DIVISION 31 – EARTHWORK
DIVISION 32 – EXTERIOR IMPROVEMENTS
DIVISION 33 – WATER UTILITIES

12-03. Arrangement of Plans. General locations and linear quantities of the work are shown in Appendix "A". A map will be provided to the successful bidder showing the exact locations of the work to be done.

12-04. Business Licenses. The Contractor and any subcontractors shall each secure and maintain a valid City of Ukiah Business License prior to the start of any portion of the work.

12-05. Permits. The Contractor shall provide, procure, and pay for all permits required to complete this work.

12-06. Standard Specifications and Standard Plans. The Standard Specifications and Standard Plans of the California State Department of Transportation, 2018, are hereby made a part of these Special Provisions and are hereinafter referred to as "California Standard Specifications" and "California Standard Plans."

Whenever in the California Standard Specifications and the California Standard Plans the following terms are used, they shall be understood to mean and refer to the following:

Department of Transportation - The City Council.

Director of Public Works - The City of Ukiah Director of Public Works.

Engineer - The Engineer, designated by the City Council, acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties entrusted to them.

Laboratory - The designated laboratory authorized by the City of Ukiah to test materials and work involved in the contract.

State - The City of Ukiah

Other terms appearing in the California Standard Specifications and the California Standard Plans shall have the intent and meaning specified in Section I, Definition of Terms of the California Standard Specifications.

In case of discrepancy between the contract documents, the order of precedence from the highest to lowest is as follows:

1. (City) Special Provisions
2. (City) Project Plans
3. City Standard Plans and Details
4. California Standard Plans
5. California Standard Specifications

12-07. Temporary Facilities. All temporary facilities are the responsibility of the Contractor. The removal of said facilities shall be the responsibility of the Contractor. The Contractor shall be responsible for any and all damages to existing facilities which are a result of the work.

12-08. Public Convenience and Safety. The Contractor shall conduct operations so as to cause the least possible obstruction and inconvenience to public traffic. The Contractor shall, at his or her expense, furnish such flag persons and furnish, erect, construct and maintain such fences, barriers, lights, signs, detours, pedestrian walkways, driveway ramps and bridging as may be necessary to give adequate warning to the public that work is in progress and that dangerous conditions exist, to provide access to abutting properties and to permit the flow of pedestrian and vehicular traffic to safely and expeditiously pass the work.

12-09. Maintaining Traffic. Attention is directed to Section 7-1.08, "Public Convenience," 7-1.09, "Public Safety," 7-1.092, "Lane Closure," and 7-1.095, "Flagging Costs," of the California Standard Specifications.

Streets shall be open to through vehicular traffic during non-working hours. All public traffic shall be permitted to pass through the work with as little inconvenience and delay as possible.

Full costs for "Maintaining Traffic", including "Flagging Costs", shall be considered as included in the various items of work and no additional compensation will be made.

12.10. Stream Pollution. The Contractor shall exercise every reasonable precaution to prevent muddying or silting of live streams, and the Contractor's attention is called to the fact that the terms of this contract do not relieve him or her of responsibility for compliance with Sections 5650 and 12015 of the Fish and Game Code or other applicable statutes relating to pollution prevention or abatement.

12-11. Warranties. Unless otherwise indicated, the Contractor shall warrant all materials provided and work performed under this contract for a period of one year from the date of final acceptance. He shall replace promptly and at his own expense any materials and/or workmanship which fail during this warranty period.

12-12. Utilities. No water, sewer or electrical services will be provided by the owner. It is the Contractor's sole responsibility to arrange such services as necessary.

12-13. Preconstruction Conference. A preconstruction conference will be held before any work will be allowed to commence. This meeting will cover inspection, schedule for work, and among other items, the responsibilities and procedures of each of the interested parties to assure that the project will be completed in accordance with the contract documents.

12-14. Safety Requirements. The Contractor shall comply with all pertinent provisions of the Department of Labor "Safety and Health Regulations for Construction (29 FCS Part 1518, 36 CFR 7340)", with additions or modifications thereto, in effect during construction of this project.

SECTION 13 - CONSTRUCTION DETAILS

13-01. Technical Specifications. See Appendix A.

13-02. Project Drawings. See Attachment A.

SECTION 14. EXCLUSIONS FROM GENERAL CONDITIONS

14-01. Provisions to be Excluded from General Conditions. The following designated provisions of the General Conditions are hereby determined to be inapplicable to the proposed work and, therefore, are hereby excluded from the terms of the Notice to Bidders, Proposal, Agreement and other contract documents as though entirely omitted from said General Conditions:

(1) Section 6-02. Office at the Site
(2) Section 7-03. Surveys

No other exclusions.

SECTION 15. AMENDMENTS TO GENERAL CONDITIONS

15-01. Sections of General Conditions to be Amended.

The following designated sections of the Special Provisions are hereby amended to read as follows:

No amendments.

BID SUBMITTAL CHECKLIST

The following is a checklist to assist you in your submission of your bid documents. Please make sure you include the following when submitting your bid documents to reduce the risk of having your bid rejected:

Did you include?...

- **Proposal** (Page 31)
  - Unit prices filled out clearly.
  - Extended prices filled out clearly and calculated correctly
  - Total bid amount filled out clearly and calculated correctly
  - Sign the proposal, and provide complete information
  - CLSB No. and expiration date
  - Department of Industrial Relations Public Works Contractor Registration Number

- **Fair Employment Practices Certification** (Page 36)
  - Filled out completely per instruction

- **Worker's Compensation Certificate** (Page 37)
  - Filled out completely per instruction

- **Certification of Non-Discrimination in Employment** (Page 38)
  - Filled out completely per instruction

- **List of Proposed Subcontractors** (Page 39)
  - Filled out completely per instruction

- **Statement of Experience** (Page 40)

- **Signature of Bidder** (Page 41)
  - Filled out completely per instruction
  - Authorized signature provided

- **Bidder's Bond** (Page 42)
  - Filled out completely per instruction

- **Non-Collusion Affidavit** (Page 43)
  - Filled out completely per instruction
  - Notarized

- **Addenda Issued**
  - Check the City website for any addenda issued: www.cityofukiah.com/purchasing Please note that actual acknowledgment of addenda is not required to submit with your bid. Refer to Section 1-11 and 3-07 of the General Conditions.

CITY OF UKIAH
MENDOCINO COUNTY, CALIFORNIA

PROPOSAL

FOR
REMODEL OF 501 SOUTH STATE STREET

Specification No. 25-04

The undersigned, as bidder,
declares that he or she has examined thoroughly all of the contract documents herein contained, that this proposal is made without collusion with any other person, firm or corporation and that all laws and ordinances relating to the interest of public officers in this contract have been complied with in every respect.

AND he or she proposes and agrees, if this proposal is accepted,

1) that he or she will contract with the City of Ukiah, Mendocino County, California, in the form of the copy of the agreement herein contained

   a) to provide all necessary machinery, tools, apparatus and other means of construction;

   b) to furnish all materials;

   c) to provide all superintendence, overhead expenses and all labor and expenses of whatever nature necessary to complete the job in conformity with the specifications and drawings and other contract provisions herein or reasonably implied hereby or as necessary to complete the work in the manner and within the time named herein and according to the requirements and to the reasonable satisfaction of the City Engineer;

   d) to pay all charges of freight transportation and hauling;

2) that he or she indemnifies the City against any loss or damage arising from any act of the undersigned as Contractor; and

3) that he or she will accept as full payment therefor the following sums:

BIDDING SCHEDULE

In the case of any discrepancy between the unit price and the total set forth for the item, the unit price shall prevail; provided, however, that if the amount set forth as a unit price is ambiguous, unintelligible or uncertain for any reason, or is omitted, or in the case of lump sum items, is not the same amount as the entry in the “Total” column, then the amount set forth in the “Total” column for the item shall prevail in accordance with the following:

1. As to lump sum items, the amount set forth in the “Total” column shall be the unit price;
2. As to unit basis items, the amount set forth in the “Total” column shall be divided by the estimated quantity for the item and the price thus obtained shall be the unit price.

The Total Base Bid shall be the sum of the items in the “Total” column. In case of discrepancy between the sum of the items in the “Total” column and the amount entered as Total Base Bid, the sum of the “Total” column items shall prevail. The bid comparison will be based on the sum of the items in the “total” column for each bidder.

The Unit prices for the various Construction Items below include all costs associated with the General Conditions, Special Provisions, Requirements of the Construction Contract, and represent the total, complete, in-place cost for each specific Construction Item in accordance with the Construction Documents, including all elements, work components, accessories, and connections, shown in applicable details or required to yield a complete, sound and functional component or system appropriate for its intended function, whether or not such is specifically described or listed in any description of measurement or payment. The total amount of the Construction items below shall represent the total and complete cost of the fully functional Project. All work not specifically listed below be required to complete the work of the various construction items and the cost of such shall be considered as included throughout the various unit prices indicated.

Lowest bid will be based on the lowest Base Bid, not including the add alternate bid item.

NAME OF BIDDER: _____
SPEC #: **25-04**
PROJECT NAME: **REMODEL OF 501 SOUTH STATE STREET**

ITEM#	DESCRIPTION	UNIT OF MEASURE	QUANTITY	UNIT PRICE	TOTAL
1	Temporary Controls, Fencing & Signage	LS	1	$_____	$_____
2	Mobilization	LS	1	$_____	$_____
3	Div 02 - Demolition	LS	1	$_____	$_____
4	Div 03 - Concrete	LS	1	$_____	$_____
5	Div 05 - Metal Fabrications	LS	1	$_____	$_____
6	Div 06 - Wood	LS	1	$_____	$_____
7	Div 07 - Insulation & Waterproofing	LS	1	$_____	$_____
8	Div 08 - Doors & Windows	LS	1	$_____	$_____
9	Div 09 - Finishes	LS	1	$_____	$_____
10	Div 10 - Signage & Accessories	LS	1	$_____	$_____
11	Div 13 - Non-Structural Seismic Restraints	LS	1	$_____	$_____
12	Div 14 - Elevator	LS	1	$_____	$_____
13	Div 21 - Wet Pipe Sprinkler Systems	LS	1	$_____	$_____
14	Div 22 - Plumbing	LS	1	$_____	$_____
15	Div 23 - Mechanical	LS	1	$_____	$_____
16	Div 26 - Electrical	LS	1	$_____	$_____
17	Div 28 - Access Control	LS	1	$_____	$_____

18	Div 31 - Earthwork	LS	1	$_____	$_____
19	Div 32 - Site Improvements	LS	1	$_____	$_____
20	Div 33 - Sanitary Sewer	LS	1	$_____	$_____
				TOTAL BASE BID ==>>	$_____

BID ALTERNATES

Item #	Description	Unit of Measure	Quantity	Unit Price	Total
A1	New Transformer - including Demo of Existing Transformer & Site Work	LS	1	$_____	$_____
				TOTAL ALTERNATE BID➔	$_____

TOTAL BID: **Items 1 through A1 inclusive: $_____**

We, the undersigned, acknowledge that the City Council has reserved the right to reject any or all bids and to determine which proposal is, in its opinion, the lowest responsive bid from a responsible bidder and that which it deems in the best interest of the City to accept. We, the undersigned, further agree, if this proposal shall be accepted, to sign the agreement and to furnish the required bonds with satisfactory surety, or sureties, within fifteen (15) calendar days after written notice that the contract is ready for signature; and, if the undersigned shall fail to contract, as aforesaid, it shall be understood that he or she has abandoned the contract and that, therefore, this proposal shall be null and void and the proposal guaranty accompanying this proposal, or the amount of said guaranty, shall be forfeited to and become the property of the City. Otherwise, the proposal guaranty accompanying this proposal shall be returned to the undersigned.

Witness our hands this day of _____, 20____.

Licensed in accordance with an act providing for the registration of California Contractors License No. _____, expiration date _____.

THE CONTRACTOR'S LICENSE NUMBER AND EXPIRATION DATE STATED HEREIN ARE MADE UNDER PENALTY OF PERJURY.

Department of Industrial Relations Public Works Contractor Registration Number:_____

Signature of bidder or bidders, with business name, address, phone number and fax number:

_____

_____

_____

_____

Notice: In the case of a corporation, give below the addresses of the principal office thereof and names and addresses of the President, Secretary, Treasurer.

_____

_____

_____

FAIR EMPLOYMENT PRACTICES CERTIFICATION

TO:_____

_____

The undersigned, in submitting a bid for performing the following work by Contract, hereby certifies that he or she has or will meet the standards of affirmative compliance with the Fair Employment Practices requirements of the Special Provisions contained herein.

REMODEL OF 501 SOUTH STATE STREET

_____
(Signature of Bidder)

Business Mailing Address:

_____

_____

_____

Business Location:

_____

_____

(The bidder shall execute the certification of this page prior to submitting his or her proposal.)

WORKER'S COMPENSATION CERTIFICATE

I am aware of the provisions of Section 3700 of the Labor Code which require every employer to be insured against liability for Worker's Compensation or undertake self-insurance in accordance with the provisions of that code and I will comply with such provisions before commencing the performance of the work of this contract.

Witness my hand this_____ day of _____, 200____

Signature of Bidder, with Business Address:

_____

_____

_____

_____

CERTIFICATION OF NONDISCRIMINATION IN EMPLOYMENT

The bidder represents that he or she has/has not, participated in a previous contract or subcontract subject to either the equal opportunity clause herein or the clause contained in Section 301 of Executive Order 10925; that he or she has/has not, filed all required compliance reports; and that representations indicating submission of required compliance prior to subcontract awards.

Signature and address of Bidder:

_____ Date_____

_____

_____

_____

(This certification shall be executed by the bidder in accordance with Section 60-1.6 of the Regulations of the President's Committee on Equal Employment Opportunity for implementing Executive Orders 10925 and 11114.)

LIST OF PROPOSED SUBCONTRACTORS

In compliance with the provisions of Sections 4100-4108 of the California Public Contract Code and any amendments thereof, each bidder shall set forth (a) the name and location of the place of business of each subcontractor who will perform work or labor or render service in or about the construction site or a subcontractor licensed by the State of California who, under subcontract to the prime contractor, specially fabricates and installs a portion of the work or improvement according to detailed drawings contained in the plans and specifications in an amount in excess of one-half of 1 percent of the total bid and (b) the California Contractor License Number for each subcontractor, and (c) the portion of the work to be done by each subcontractor.(See General Conditions Section 1-09.) Include with the name of each sub-contractor their Department of Industrial Relations Public Works Contractor Registration Number.

SUBCONTRACTOR NAME	SUBCONTRACTOR LICENSE NUMBER	SUBCONTRACTOR DIR REGISTRATION NUMBER	SUBCONTRACTOR BUSINESS ADDRESS	DESCRIPTION OF WORK

STATEMENT OF EXPERIENCE OF BIDDER

The bidder is required to state below what work of similar magnitude or character he or she has done and to give references that will enable the City Council to judge of his or her experience, skill and business standing and his or her ability to conduct work as completely and rapidly as required under the terms of the contract.

SIGNATURE(S) OF BIDDER

Accompanying this proposal is _____
(insert the words "cash ($)", "cashier's check" or "bidder's bond", as the case may be) in an amount equal to at least 10 percent of the bid.

The names of all persons interested in the foregoing proposal as principals are as follows:

IMPORTANT NOTICE: If bidder or other interested person is a corporation, provide the legal name of corporation and also the names of the president, secretary, treasurer and manager thereof. If a co-partnership, provide the true name of firm and also the names of all individual co-partners composing the firm. If bidder or other interested person is an individual, provide the first and last names in full.

_____

_____

_____

Licensed in accordance with an act providing for the registration of Contractors:

License No. _____, License Expiration Date _____.

Signature(s) of Bidder: _____

_____

_____

NOTE: If bidder is a corporation, the legal name of the corporation shall be set forth above together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation; if bidder is a co-partnership, the true name of the firm shall be set forth above together with the signature of the partner or partners authorized to sign contracts in behalf of the co-partnership; and if bidder is an individual, his or her signature shall be placed above. If a member of a partnership, a Power of Attorney must be on file with the Department prior to opening bids or submitted with the bid; otherwise, the bid will be disregarded as irregular and unauthorized.

Business address: _____

_____

Place of residence: _____

_____

Dated: _____

CITY OF UKIAH
Mendocino County, California

BIDDER'S BOND

KNOW ALL MEN BY THESE PRESENTS,

That we, _____

_____, as PRINCIPAL and

_____

_____, as SURETY,

are held and firmly bound unto the City of Ukiah in the penal sum of 10 PERCENT OF THE TOTAL AMOUNT OF THE BID of the Principal above named, submitted by said Principal to the City of Ukiah, as the case may be, for the work described below, for the payment of which sum in lawful money of the United States, well and truly to be made, to the City Clerk to which said bid was submitted, we bind ourselves, our heirs, executors, administrators and successors jointly and severally, firmly by these presents. In no case shall the liability of the surety hereunder exceed the sum of $_____

THE CONDITION OF THIS OBLIGATION IS SUCH,

That whereas the Principal has submitted the above mentioned bid to the City of Ukiah, as aforesaid, for certain construction specifically described as follows, for which bids are to be opened at the Office of the City Clerk, Ukiah Civic Center, Ukiah, California, on AUGUST 19, 2025 for REMODEL OF 501 SOUTH STATE STREET.

NOW, THEREFORE, If the aforesaid Principal is awarded the contract and, within the time and manner required under the specifications, after the prescribed forms are presented to him or her for signatures, enters into a written contract, in the prescribed form, in accordance with the bid and files two bonds with the City of Ukiah, one to guarantee faithful performance and the other to guarantee payment for labor and materials, as required by law, then this obligation shall be null and void; otherwise, it shall be and remain in full force and virtue.

IN WITNESS WHEREOF, we have hereunto set our hands and seals on this _____ day of _____, A.D. 20_____.

_____(Seal)

_____(Seal)

_____(Seal)
Principal

_____(Seal)

_____(Seal)

_____(Seal)
Surety

Address: _____

_____

_____

NON-COLLUSION AFFIDAVIT

Note: Bidder shall execute the affidavit on this page prior to submitting his or her bid.

To City Council, City of Ukiah:

The undersigned in submitting a bid for performing REMODEL OF 501 SOUTH STATE STREET by contract, being duly sworn, deposes and says:

that he or she has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with such contract.

_____

_____

_____
Signature(s) of Bidder

Business Address:_____

_____

_____

Place of Residence:_____

_____

_____

NOTARIZATION

Subscribed and sworn to before me this _____ day of _____, 20____.

_____

Notary Public in and for the County of_____, State of California.

My Commission Expires _____, 20 ____.

CITY OF UKIAH
Mendocino County, California

AGREEMENT

FOR

REMODEL OF 501 SOUTH STATE STREET

Specification No. 25-04

THIS AGREEMENT, made this _____ day of _____, 20____, by and between the City of Ukiah, Mendocino County, California, hereinafter called the City and _____ hereinafter called the Contractor,

WITNESSETH:

WHEREAS, the City has caused to be prepared in accordance with law, specifications, drawings and other contract documents for the work herein described and shown and has approved and adopted these contract documents, specifications and drawings and has caused to be published in the manner and for the time required by law a notice to bidders inviting sealed proposals for doing the work in accordance with the terms of this contract and

WHEREAS, the Contractor, in response to the notice to bidders, has submitted to the City a sealed proposal accompanied by a proposal guaranty in an amount of not less than 10 percent of the bid price for the construction of the proposed work in accordance with the terms of this contract and

WHEREAS, the City, in the manner prescribed by law, has publicly opened, examined and canvassed the proposals submitted and as a result has determined and declared the Contractor to be the lowest and best regular responsible bidder for the work and for the sums named in the proposal,

NOW, THEREFORE, THIS AGREEMENT WITNESSETH:

Article 1. Work to be Done and Contract Days Allowed.

That the Contractor shall provide all necessary machinery, tools, apparatus and other means of construction; shall furnish all materials, superintendence, overhead, expenses, all labor and expenses of whatever nature necessary for completion of the work in conformity with the Special Provisions and other contract documents hereto attached and according to such instructions as may be given by the Engineer. The Contractor shall complete the work within TWO HUNDRED AND FORTY (240) working days. Contract days shall be counted starting with the 10th day following receipt of notice that the contract has been executed by the City. Contractor, at his or her option, may begin work prior to start of counting contract days, however, in no event shall the Contractor start work without giving notification to the Engineer at least 72 hours prior to the start of work, without obtaining an encroachment permit from the City, or without having submitted certificates of insurance that have been accepted and approved by the Engineer

Article II. Contract Prices.

That the City shall pay the Contractor the prices stated in the proposal submitted by the Contractor, for complete performance of the contract by the Contractor. The Contractor hereby agrees to accept the prices as full compensation for all material and appliances necessary to the work, for all labor and use of tools and other implements necessary to execute the work contemplated in this contract; for all loss or damage arising out of the nature of the work or from the action of the elements, or from any unforeseen obstructions or difficulties which may be encountered in the prosecution of the work; for all risks of every description connected therewith; for all expenses of the work, as herein specified; for all liability and other insurance, for all overhead and other expenses incident to the work; all according to the Contract Drawings, the Special Provisions, the Details, the instructions and the requirements of the City.

Article III. Labor Discrimination.

Attention is directed to Section 1735 of the Labor Code, which reads as follows:

> "No discrimination shall be made in the employment of persons upon public works because of the race, color, national origin or ancestry, or religion of such persons and every contractor for public works violating this section is subject to all the penalties imposed for a violation of this chapter."

In connection with the performance of work under this contract, the Contractor agrees as follows:

(a) The Contractor will not willfully discriminate against any employee or an applicant for employment because of race, color, religion, ancestry, or national origin. The Contractor will take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, color, religion, ancestry, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the awarding authority setting forth the provisions of this Fair Employment Practice section.

(b) The Contractor will send to each labor union or representative of workers with which he or she has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the awarding authority, advising the said labor union or worker's representative of the Contractor's commitments under this section, to employees and applicants for employment.

(c) The Contractor will permit access to his or her records of employment, employment advertisements, application forms and other pertinent data and records by the Fair Employment Practices Commission, City of Ukiah or any other appropriate agency of the State of California designated by the awarding authority, for the purposes of investigation to ascertain compliance with the Fair Employment Practices section of this contract.

(d) A finding of willful violation of the Fair Employment Practices section of this Contract or of the Fair Employment Practices Act shall be regarded by the awarding authority as a basis for determining the Contractor to be not a "responsible bidder" as to future contracts for which such Contractor may submit bids, for revoking the Contractor's pre-qualification rating, if any and for refusing to establish, reestablish or renew a pre-qualification rating for the Contractor.

The City of Ukiah shall deem a finding of willful receipt of written notice from the Fair Employment Practices Act to have occurred upon that it has investigated and determined that the Contractor has

violated the Fair Employment Practices Act and has issued an order under Labor Code Section 1426 or obtained an injunction under Labor Code Section 1429.

Upon receipt of such written notice from the Fair Employment Practices Commission, the City shall notify the Contractor that unless he or she demonstrates to the satisfaction of the awarding authority within a stated period that the violation has been corrected, his or her pre-qualification rating will be revoked at the expiration of such period.

(e) The Contractor agrees that should the City determine that the Contractor has not complied with the Fair Employment Practices section of this Contract, then pursuant to Labor Code Section 1735 and 1775 the Contractor shall, as a penalty to the City, forfeit for each calendar day or portion thereof, for each person who was denied employment as a result of such non-compliance, the penalties provided in the Labor Code for violation of prevailing wage rates. Such monies may be recovered from the Contractor. The City may deduct any such damages from any monies due the Contractor.

(f) Nothing contained in this Fair Employment Practices section shall be construed in any manner of fashion so as to prevent the City or the State of California from pursuing any other remedies that may be available at law.

(g) Prior to awarding the Contract, the Contractor shall certify to the awarding authority that he or she has or will meet the following standards for affirmative compliance, which shall be evaluated in each case by the awarding authority:

(1) The Contractor shall provide evidence, as required by the City that he or she has notified all supervisors, foremen and other personnel officers in writing of the content of the anti-discrimination clause and their responsibilities under it.

(2) The Contractor shall provide evidence, as required by the City, that he or she has notified all sources of employees' referrals (including unions, employment agencies, advertisements, Department of Employment) of the content of the anti-discrimination clause.

(3) The Contractor shall file a basic compliance report, as required by the City. Willfully false statements made in such reports shall be punishable as provided by law. The compliance report shall also spell out the sources of the work force and who has the responsibility for determining whom to hire, or whether or not to hire.

(4) Personally, or through his or her representatives, the Contractor shall, through negotiations with the unions with whom he or she has agreements, attempt to develop an agreement which will:

a. Spell out responsibilities for nondiscrimination in hiring, referral, upgrading and training.

b. Otherwise implement an affirmative anti-discrimination program in terms of the unions' specific areas of skill and geography to the end that qualified minority workers will be available and given and equal opportunity for employment.

(5) The Contractor shall notify the City of opposition to the anti-discrimination clause by individuals, firms or organizations during the period of its pre-qualification.

(h) The Contractor will include the provisions of the foregoing paragraphs 1 through 5 in every first tier subcontract so that such provisions will be binding upon each such subcontractor.

(i) The "Fair Employment Practices Certification" must be completed and signed prior to the time of submitting the bid.

Article IV. Parts of the Contract.

That the complete contract consists of the following documents, all of which shall be considered a part of this agreement.

1. Notice to Bidders
2. Wage Rates
3. General Conditions
4. Technical Specifications
5. Proposal
6. Fair Employment Practices Certification
7. Agreement
8. Contract Bonds
9. Contract Drawings and Construction Details
10. Standard Drawings
11. Indemnification Agreement

IN WITNESS WHEREOF, this contract being executed in duplicate and the parties having caused their names to be signed by authority of their duly authorized office this _____ day of _____, 20____.

CITY OF UKIAH, MENDOCINO COUNTY, CALIFORNIA

By: _____
CITY MANAGER, CITY OF UKIAH

Attest: _____
CITY CLERK, CITY OF UKIAH

By: _____
CONTRACTOR

Attest: _____

Title: _____

The foregoing contract is approved as to form and legality this _____ day of _____, 20 ____.

_____
CITY ATTORNEY, CITY OF UKIAH

INDEMNIFICATION AGREEMENT

This Indemnification Agreement is made and entered in Ukiah, California, on _____, 20____, by and between the City of Ukiah (Ukiah) and _____ (Contractor).

Contractor is

_____

_____ for Ukiah.

As a condition of issuing the work order, attached hereto, Ukiah requires assurance that Contractor will protect Ukiah from damage or damage claims which arise from its performance of the work.

Accordingly, Contractor agrees as follows:

1. **Indemnification**. Contractor shall indemnify and hold harmless Ukiah and its officers, agents, and employees from and against any claim, loss, or damage, including the legal and other costs of defending against any claim of damage or loss which arises out of the Contractor's negligent or wrongful performance under the work order attached hereto, except for claims, losses, or damages resulting from the sole and exclusive negligence or other wrongful conduct of Ukiah or its officers, agents and employees.

CONTRACTOR

BY: _____

TITLE: _____

CITY OF UKIAH
Mendocino County, California

PERFORMANCE BOND

BOND No._____

KNOW ALL PERSONS BY THESE PREESNTS:

THAT WHEREAS, the City of Ukiah, organized and operating under the laws of the State of California, (hereinafter referred to as the "City") has awarded to _____, (hereinafter referred to as the "Contractor") an agreement for Contract No. _____ (hereinafter referred to as the "Project").

WHEREAS, the work to be performed by the Contractor is more particularly set forth in the Contract for the Project dated _____, (hereinafter referred to, together with all attachments and exhibits thereto, as "Contract Documents"), the terms and conditions of which are expressly incorporated herein by reference; and

WHEREAS, the Contractor is required by the Contract Documents to perform the terms thereof and to furnish a bond for the faithful performance of said Contract Documents.

NOW, THEREFORE, we, _____, the undersigned Contractor and _____, as Surety, a corporation organized and duly authorized to transact business under the laws of the State of California, are held firmly bound until the City in the sum of _____ ($_____), for which amount well and truly to be made, we bind ourselves, our heirs ,executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that, if the Contractor, his or its heirs, executors, administrators, successors or assigns, shall in all things stand to and abide by, and well and truly keep and perform the covenants, conditions and agreements in the Contract Documents and any alteration thereof made as therein provided, on its part, to be kept and performed at the time and in the manner therein specified, and in all respects according to their intent and meaning; and shall faithfully fulfill all obligations; and shall indemnify and save harmless the City, its officials, officers, employees, and authorized volunteers, as stipulated in said Contract Documents, then this obligation shall become null and void; otherwise it shall be and remain in full force and effect.

As part of the obligation secured hereby and in addition to the face amount specified therefore, there shall be included costs and reasonable expenses and fees including reasonable attorneys' fees, incurred by the City in enforcing such obligation.

As a condition precedent to the satisfactory completion of the Contract Documents, unless otherwise provided for in the Contract Documents, the above obligation shall hold good for a period of one (1) year after the acceptance of the work by the City, during which time if Contractor shall fail to make full, complete, and satisfactory repair and replacements and totally protect the City from loss or damage resulting from or caused by defective materials or faulty workmanship. The obligations of Surety hereunder shall continue so long as any obligation of Contractor remains. Nothing herein shall limit the City's rights or the Contractor or Surety's obligations under the Contract Documents, law or equity, including, but not limited to, California Code of Civil Procedure Section 337.15.

Whenever Contractor shall be, and is declared by the City to be, in default under the Contract Documents, the Surety shall remedy the default pursuant to the Contract Documents, or shall promptly, at the City's option:

i. Take over and complete the Project in accordance with all terms and conditions in the Contract Documents; or

ii. Obtain a bid or bids for completing the Project in accordance with all terms and conditions in the Contract Documents and upon determination by Surety of the lowest responsive and responsible bidder, arrange for a contract between such bidder, the Surety and the City, and make available as work progresses sufficient funds to pay the cost of completion of the Project, less the balance of the contract

price, including other costs and damages for which Surety may be liable. The term "balance of the contract price" as used in this paragraph shall mean the total amount payable to Contractor by the City under the Contract and any modification thereto, less any amount previously paid by the City to the Contractor and any other set offs pursuant to the Contract Documents.

iii. Permit the City to complete the Project in any manner consistent with California law and make available as work progresses sufficient funds to pay the cost of completion of the Project, less the balance of the contract price, including other costs and damages for which Surety may be liable. The term "balance of the contract price" as used in this paragraph shall mean the total amount payable to Contractor by the City under the Contract and any modification thereto, less any amount previously paid by the City to the Contractor and any other set offs by the City pursuant to the Contract Documents.

Surety expressly agrees that the City may reject any contractor or subcontractor which may be proposed by Surety in fulfillment of its obligations in the event of default by the Contractor.

Surety shall not utilize Contractor in completing the Project nor shall Surety accept a bid from Contractor for completion of the Project if the City, when declaring the Contractor in default, notifies Surety of the City's objection to Contractor's further participation in the completion of the Project.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Contract Documents or to the Project to be performed thereunder shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Contract Documents or to the Project.

[REMAINDER OF PAGE LEFT INTENTIONALLY BLANK]

IN WITNESS WHEREOF, we have hereunto set our hands and seals this ____ day of _____, 2022.

(Corporate Seal)

_____
Contractor/Principal

By_____

Title_____

(Corporate Seal)

_____
Surety

By_____
Attorney-in-Fact

(Attach Attorney-in Fact Certificate)

Title_____

The rate of premium on this bond is _____ per thousand. The total amount of premium charges is $_____.

(The above must be filled in by corporate attorney.)

THIS IS A REQUIRED FORM.

Any claims under this bond may be addressed to:

(Name and Address of Surety) _____

_____

_____

(Name and Address of Agent or _____

Representative for service of process in _____

California, if different from above) _____

(Telephone number of Surety and Agent _____
or Representative for service of process in California)

CITY OF UKIAH
Mendocino County, California

PAYMENT BOND

BOND No. _____

KNOW ALL PERSONS BY THESE PRESENTS:

WHEREAS, the City of Ukiah ("City") has awarded to _____ ("Contractor/Principal") a contract (City Agreement No. _____, dated _____, _____, referred to as the "Agreement") for the work described as _____. The Agreement is incorporated by this reference into this Payment Bond ("Bond"); and

WHEREAS, Contractor/Principal is required to furnish a bond in connection with the Agreement and pursuant to California Civil Code section 9550;

NOW, THEREFORE, we _____, the undersigned Contractor/Principal, and _____ ("Surety"), a corporation organized and existing under the laws of the State of _____, and duly authorized to transact business under the laws of the State of California, as Surety, are held firmly bound until the City, and to any and all persons, companies, or corporations entitled by law to file stop payment notices under California Civil Code Section 9100, or any person, company, or corporation entitled to make a claim on this bond, in the sum of $_____, for which payment will and truly be made, we bind ourselves, our heirs, executors and administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that if Contractor/Principal, its heirs, executors, administrators, successors, or assigns, or subcontractor, shall fail to pay any person or persons named in Civil Code section 9100; or fail to pay for any materials, provisions, or other supplies, used in, upon, for , or about the performance of the work contracted to be done, or for any work or labor thereon of any kind, or for amounts due under the Unemployment Insurance Code, with respect to work or labor thereon of any kind; or shall fail to deduct, withhold, and pay over to the Employment Development Department, any amounts required to be deducted, withheld, and paid over by Unemployment Insurance Code Section 13020 with respect to work and labor thereon of any kind, then Surety will pay for the same, in an amount not exceeding the amount herein above set forth, and in the event suit is brought upon this bond, also will pay such reasonable attorneys' fees as shall be fixed by the court, awarded and taxed as provided in California Civil Code Section 9550, et seq.

It is further stipulated and agreed that the Surety of this bond shall not be exonerated or released from the obligation of the bond by any change, extension of time for performance, addition, alteration or modification in, to, or of any contract, plans, or specifications, or agreement pertaining or relating to any scheme or work of improvement herein above described; or pertaining or relating to the furnishing of labor, materials, or equipment therefor; nor by any change or modification of any terms of payment or extension of time for payment pertaining or relating to any scheme or work of improvement herein above described; nor by any rescissions or attempted rescission of the contract, agreement or bond; nor by any conditions precedent or subsequent in the bond attempting to limit the right of recovery of claimants otherwise entitled to recover under any such contract or agreement or under the bond; nor by any fraud practiced by any person other than the claimant seeking to recover on the bond; and that this bond be construed most strongly against the Surety and in favor of all persons for whose benefit such bond is give; and under no circumstances shall the Surety be released from liability to those for whose benefit such bond has been given, by reason of any breach of contract between the Owner and Contractor/Principal or on the part of any oblige named in such bond; that the sole condition of recovery shall be that the claimant is a person described in California Civil Code section 9100, and who has not been paid the full amount of his or her claim; and that the Surety does hereby waive notice of any such change, extension of time, addition, alteration or modification herein mentioned, including but not limited to the provisions of section 2819 and 2845 of the California Civil Code.

Any notice to Surety may be given in the manner specified in the Agreement and delivered or transmitted to Surety as follows:

Attn:_____

Address:_____

City/State/Zip:_____

Phone:_____

Fax:_____

Email:_____

IN WITNESS WHEREO, two identical counterparts of this Bond, each of which shall for all purposes be deemed an original thereof, have been duly executed by Contractor/Principal and Surety above named, on the __ day of _____, 202__.

_____ (SEAL)
Contractor/Principal

By_____
Contractor's Representative

_____
Contractor/Principal's Address

_____
City,State,Zip

_____(SEAL)
Surety

By_____
Surety's Representative

_____
Surety's Address

_____
City,State,Zip

_____
Telephone Number

NOTE: Signatures of those executing for Surety must be properly acknowledged, The bond must be accompanied by a properly acknowledged Power of Attorney from the Surety authorizing its agent to bind it to this bond. A copy of such Power of Attorney must be in file with the City.

DIRECTIONS FOR PREPARATION OF PERFORMANCE AND MATERIAL AND LABOR BOND

1. Individual sureties, partnerships, or corporations not in the surety business will not be acceptable.

2. The name of the Principal shall be shown exactly as it appears in the Contract.

3. The penal sum shall not be less than required by the Specifications.

4. If the Principals are partners or joint venturers, each member shall execute the bond as an individual and state his place of residence.

5. If the Principal is a corporation, the bond shall be executed under its corporate seal.
If the corporation has no corporate seal, it shall so state and affix a scroll or adhesive seal following the corporate name.

6. The official character and authority of the person(s) executing the bond for the Principal, if a corporation, shall be certified by the Secretary or Assistant Secretary thereof under the corporate seal, or copies attached to such records of the corporation as will evidence the official character and authority of the officer signing, duly certified by the Secretary or Assistant Secretary, under the corporate seal, to be true copies.

7. The current power-of-attorney of the person signing for the surety company must be attached to the bond.

8. The date of the bond must not be prior to the date of the Contract.

9. The following information must be placed on the bond by the surety company:

   a. The rate of premium in dollars per thousand; and

   b. The total dollar amount of premium charged.

10. The signature of a witness shall appear in the appropriate place attending to the signature of each party of the bond.

11. Type or print the name underneath each signature appearing on the bond.

12. An executed copy of the bond must be attached to each copy of the Contract (original counterpart) intended for signing.

CITY OF UKIAH
Mendocino County, California

DEFECTIVE MATERIAL AND WORKMANSHIP (MAINTENANCE) BOND

KNOW ALL MEN BY THESE PRESENTS,

That we, _____

_____, as **PRINCIPAL**

and_____

_____, as **SURETY**,

are held and firmly bound unto the **City of Ukiah** as Obligee, in the penal sum of

_____

_____($_____),
(5 PERCENT OF THE FINAL CONTRACT AMOUNT)

to which payment well and truly to be made, we do bind ourselves, our and each of our heirs, executors, administrators successors and assigns jointly and severally, firmly by these presents.

WHEREAS, the said Principal entered into a Contract with the City of Ukiah
dated_____
for _____
_____

WHEREAS, said Contract has been completed, and was approved on the _____ day of _____, _____,

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal shall guarantee that the work will be free of any defective materials or workmanship which become apparent during the period of one (1) year following completion of the Contract, then this obligation shall be void, otherwise to remain in full force and effect, provided however, any additional warranty or guarantee whether expressed or implied is extended by the Principal or Manufacturer only, and the surety assumes no liability for such a guarantee.

Signed, sealed, and dated this _____ day of _____, 20_____.

_____(Seal)

BY:_____(Seal)

_____(Seal)
Principal

_____(Seal)

BY:_____(Seal)

_____(Seal)
Surety

INSURANCE REQUIREMENTS FOR CONTRACTORS

Contractor shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by the Contractor, his agents, representatives, employees or subcontractors.

I. **Minimum Scope of Insurance**

Coverage shall be at least as broad as:

A. Insurance Services Office Commercial **General Liability coverage** (Form No. CG 20 10 10 01 and Commercial General Liability – Completed Operations Form No. CG 20 37 10 01).

B. Insurance Services Office form number CA 0001 (Ed. 1/87) covering **Automobile Liability**, code 1 (any auto).

C. **Worker's Compensation** insurance as required by the State of California and Employer's Liability Insurance.

II. **Minimum Limits of Insurance**

Contractor shall maintain limits no less than:

A. General Liability: $2,000,000 per occurrence for bodily injury, personal injury and property damage **including operations, products and completed operations.** If Commercial General Liability Insurance or other form with a general aggregate limit is used, either the general aggregate limit shall apply separately to this project/location or the general aggregate limit shall be twice the required occurrence limit. Insurance must be written on an occurrence basis.

B. Automobile Liability: $2,000,000 per accident for bodily injury and property damage. Insurance must be written on an occurrence basis.

C. Worker's Compensation Employer's Liability: $1,000,000 per accident for bodily injury or disease.

III. **Deductibles and Self-Insured Retentions**

Any deductibles or self-insured retentions must be declared to and approved by the City. The City may require the insurer to reduce or eliminate such deductibles or self-insured retentions with respect to the City, its officers, officials, employees and volunteers; or the Contractor to provide a financial guarantee satisfactory to the City guaranteeing payment of losses and related investigations, claim administration and defense expenses; or to approve the deductible without a guarantee.

IV. **REQUIRED Insurance Provisions**

Proof of **general liability and automobile liability** policies are to contain, or **be endorsed** to contain, the following provisions:

A. The City, its officers, officials, employees, and volunteers are to be covered as **ADDITIONAL INSURED** with respect to liability arising out of automobiles owned, leased, hired or borrowed by or on behalf of the contractor; and with respect to liability arising out of work or operations performed by or on behalf of the Contractor including materials, parts or equipment, furnished in connection with such work or operations. General liability coverage can be provided in the form of an endorsement to the Contractor's insurance, or as a separate owner's policy.

B. **The workers' compensation policy is to be endorsed with a waiver of subrogation**. The insurance company, in its endorsement, agrees to waive all rights of subrogation against the City, its officers, officials, employees and volunteers for losses paid under the terms of this policy which arises from the work performed by the named insured for the City. NOTE: You cannot be added as an additional insured on a workers' compensation policy.

C. For any claims related to this project, the Contractor's insurance coverage shall be **primary insurance** with respect to the City, its officers, officials, employees, and volunteers. Any insurance or self-insurance maintained by the City, its officers, officials, employees, or volunteers shall be in excess of the Contractor's insurance and shall not contribute with it.

D. Each insurance policy required by this clause shall be endorsed to state that coverage shall **not be canceled** by either party, except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to the City.

E. **Note: (This protects the Contractor)** -Coverage shall not extend to any indemnity coverage for the active negligence of the additional insured in any case where an agreement to indemnify the additional insured would be invalid under Subdivision (b) of Section 2782 of Civil Code.

V. **RATING - Acceptability of Insurers**

Insurance is to be placed with admitted California insurers with a current A.M. Best's rating of no less than A- for financial strength, AA for long-term credit rating and AMB-1 for short-term credit rating.

VI. **Verification of Coverage**

Contractor shall furnish the City with original certificates and amendatory endorsements affecting coverage required by this clause. The endorsements should be on **forms provided by the City.** If endorsements are on forms other than the City's forms, those endorsements or policies must provide coverage that is equivalent to or better than the forms requested by the City. All certificates and endorsements are to be received and approved by the City before work commences. The City reserves the right to require complete, certified copies of all required insurance policies, including endorsements affecting the coverage required by these specifications at any time.

VII. **Subcontractors**

Contractor shall include all subcontractors as insured under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverage for subcontractors shall be subject to all of the requirements stated herein.

If you have questions regarding our insurance requirements contact:

Risk Manager
(707) 463-6287 FAX (707) 463-6204

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PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General Conditions and Supplemental General Conditions and other Division 01 General Requirements, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling requests for Substitutions.

B. Pre-bid substitutions will not be considered. No Substitution request will be accepted or considered by City prior to bid.

C. Procedural requirements governing the Contractor's selection of products and product options are included under General Requirements - Product Requirements.

1.3 DEFINITIONS

A. Definitions used in this Section are not intended to change or modify the meaning of other terms used in the Contract Documents.

B. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents are considered requests for "substitutions." Where phrases such as "or equal" or "or equal as approved by the Architect" occurs in the Contract Documents, do not assume that materials or equipment will be approved as equal unless the item has been specifically approved for this work by the Architect prior to Bid Opening Date, or as otherwise allowed in these Contract Documents.

The following are not considered substitutions:

1. Revisions to Contract Documents requested by the Owner or Architect.

2. Specified options of products and construction methods included in Contract Documents.

3. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.4 SUBMITTALS

A. If the Contractor desires to use material or equipment other than that specified, they shall submit a request for approval of such substitution, in writing, to the Construction Manager.
Product Substitutions for all Specification Sections must be requested within the time period specified in the general conditions. Substitution Request Form: Use CSI Form 13.1A.

B. Submit Substitution Request packages using the form provided and in a quantity to be returned to the Contractor plus four (4) copies of each request for substitution for review by the Architect.

C. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:

1. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.

2. Samples where applicable or requested.

3. A detailed, side-by-side comparison of the significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include but is not necessarily limited to elements such as size, weight, durability, performance and visual effect.

4. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors will become necessary to accommodate the proposed substitution.

5. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.

6. Cost information, including a proposal of the net change, if any, in the Contract Sum.

7. Certification by the Contractor that the substitution proposed is equal-to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately

8. The Contractor warrants that they have investigated the proposed product and determined that it is equal to or superior in all respects to that indicated or specified.

9. The Contractor waives claim for additional costs and time associated with the proposed product, which may subsequently become apparent.

10. The Contractor shall provide a signed statement that the proposed product is in full compliance with the Contract Documents, and applicable regulatory requirements, requires no changes to specified controls and monitoring systems that may be specified in other Sections, and Certify that the Contractor will be responsible for coordination at no additional expense to the Owner

11. The Contractor shall provide information on availability of maintenance service, and source of replacement materials, and provide a sample of Manufacturer’s standard form of guarantee or warranty for proposed product.

1.5 CONSTRUCTION MANAGER'S ACTION

A. Within ten (10) days of receipt of the request, the Construction Manager will notify the Contractor of acceptance or rejection of the proposed substitution. The Architect at their sole discretion will determine the acceptability of proposed products and their determination shall be final. If a decision on use of a proposed substitution cannot be made or obtained within the time allocated, use the product specified by name in the Contract Documents.

B. No consideration will be given to a substitute product unless, in the Architect's judgment, it complies with the following conditions.

1. Substitution Request is complete.

2. It is equal in quality, performance and serviceability.

3. Its use does not entail changes in details or related construction.

4. It is acceptable in regards to design and aesthetic effect.

5. There is a cost and/or time advantage to the Owner.

C. Acceptance of a product shall not relieve the Contractor from responsibility for the proper execution of the Work and any other requirements of the Contract Documents.

D. If a proposed product is not accepted, use the product originally specified or indicated in the Contract Documents.

E. No products other than those indicated or specified in the Contract Documents shall be purchased or incorporated in the Work without the Architect's prior written acceptance.

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Conditions: The Contractor's substitution request will be received and considered by the Architect when one (1) or more of the following conditions are satisfied, as determined by the Architect; otherwise requests will be returned without action except to record noncompliance with these requirements.

1. Extensive revisions to Contract Documents are not required.

2. Proposed changes are in keeping with the general intent of the Contract Documents.

3. The request is timely, fully documented and properly submitted.

4. The request is directly related to an "or equal" clause or similar language in the Contract Documents.

5. The Specified product or method of construction cannot be provided within the Contract Time. The request will not be considered if the product or method

cannot be provided as a result of failure to pursue the Work promptly or coordinate activities properly.

6. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.

7. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Architect for redesign and evaluation services, increased cost of other construction by the Owner or Separate Contractors, and similar considerations.

8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Contractor certifies that the substitution will overcome the incompatibility.

9. The specified product or method of construction cannot be coordinated with other materials, and where the Contractor certifies that the proposed substitution can be coordinated.

10. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provides the required warranty.

B. The Contractor's submittal and Architect's acceptance of Shop Drawings, Product Data or Samples that relate to construction activities not complying with the Contract Documents, does not constitute an acceptable or valid request for substitution, nor does it constitute approval.

PART 3 - EXECUTION (not used)

END OF SECTION

Advancement of Construction Technology

SUBSTITUTION REQUEST
(After the Bidding Phase)

Project: Insert project name

Substitution Request Number: For the Architect to fill in.

From: Insert your name and company name

To: Insert name of Architect, Engineer or GC

Date: Insert the current date

A/E Project Number: Fill in if you know the number

Re: Substitution request

Contract For: Insert your contract scope (in general)

Specification Title: Insert spec title from specification book

Description: Copy section title from specification

Section: Copy from spec book

Page: insert page Article/Paragraph: insert para

Proposed Substitution: _____

_____ Manufacturer:

_____ Address: _____ Phone: insert plant phone number

Trade Name: _____ Model No.:)

Installer: insert subs company Address: insert subs address Phone: insert subs phone number

History: ☐ New product ☐ 2-5 years old X☐ 5-10 years old ☐ More than 10 years old

Differences between proposed substitution and specified product: _____

X☐ Point-by-point comparative data attached - REQUIRED BY A/E.

Reason for not providing specified item: _____

Similar Installation:

Project: List a completed project Architect: Insert name of Architect on completed project

Address: Insert project address Owner: Insert name of Owner on completed project

_____ Date Installed: _____

Proposed substitution affects other parts of Work: X ☐ No ☐ Yes; explain _____

Savings to Owner for accepting substitution: _____ ($ _____).

Proposed substitution changes Contract Time: ☐ No ☐ Yes [Add] [Deduct] _____ days.

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

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99 Canal Center Plaza, Suite 300 Alexandria, VA 22314

SUBSTITUTION

REQUEST
(Continued)

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: Insert submitters name, normally project manager for sub

Signed by: Submitter to sign

Firm: Insert Submitters company name

Address: Insert

Telephone: Insert company phone number

Attachments: List name of attachments

A/E's REVIEW AND ACTION

☐ Substitution approved - Make submittals in accordance with Specification Section 01330.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: Date:

Additional Comments: ☐ Contractor ☐ Subcontractor ☐ Supplier ☐ Manufacturer ☐ A/E ☐ _____

September 1996
CSI Form 13.1A

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PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
   1. Coordination Drawings.
   2. Project meetings.
   3. Requests for Interpretation (RFIs).

1.2 DEFINITIONS

A. RFI: Request For Information from Contractor seeking interpretation or clarification of the Contract Documents.

1.3 WEB-BASED PROJECT MANAGEMENT SOFTWARE – NOT USED

1.4 COORDINATION

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.
4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Pre-installation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.
9. Project closeout activities.

1.5 SUBMITTALS

A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.
1. Content: Project-specific information, drawn accurately to scale. Do not base Coordination Drawings on reproductions of the Contract Documents or standard printed data. Include the following information, as applicable:
a. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
b. Indicate dimensions shown on the Contract Drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect for resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.

2. Sheet Size: At least 8-1/2 by 11 inches (215 by 279 mm) but no larger than 30 by 42 inches (750 by 1067 mm).
3. Number of Copies: Submit electronic files for each submittal and produce hard copies as required by the Architect.
4. Refer to individual Sections for Coordination Drawing requirements for Work in those Sections.

1.6 PROJECT MEETINGS

A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner, Construction Manager and Architect of scheduled meeting dates and times.
2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner, Construction Manager and Architect, within three (3) days of the meeting.

B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Kitchell, but no later than fifteen (15) days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
1. Attendees: Authorized representatives of Owner, Construction Manager, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress, including the following:
a. Tentative construction schedule.
b. Phasing.
c. Critical work sequencing and long-lead items.
d. Designation of key personnel and their duties.
e. Procedures for processing field decisions and Change Orders.
f. Procedures for RFIs.
g. Procedures for testing and inspecting.
h. Procedures for processing Applications for Payment.
i. Distribution of the Contract Documents.
j. Submittal procedures.
k. LEED requirements.
l. Preparation of Record Documents.
m. Use of the premises and existing buildings.
n. Work restrictions.
o. Owner's occupancy requirements.

p. Responsibility for temporary facilities and controls.
q. Construction waste management and recycling.
r. Parking availability.
s. Office, work, and storage areas.
t. Equipment deliveries and priorities.
u. First aid.
v. Security.
w. Progress cleaning.
x. Working hours.

3. Notes: Construction Manager or Architect will record and distribute meeting notes.

C. Progress Meetings: Construction Manager will conduct progress meetings at **weekly** intervals. Coordinate dates of meetings with preparation of payment requests.

1. Attendees: In addition to representatives of Owner, Construction Manager and Architect, each subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. General Contractor's designated Project Manager and Superintendent must attend all Progress Meetings in addition to all other project related meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve notes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
   a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
      1) Review schedule for next period.
   b. Review present and future needs of each entity present, including the following:
      1) Interface requirements.
      2) Sequence of operations.
      3) Status of submittals.
      4) Deliveries.
      5) Off-site fabrication.
      6) Access.
      7) Site utilization.
      8) Temporary facilities and controls.
      9) Work hours.
      10) Hazards and risks.
      11) Progress cleaning.
      12) Quality and work standards.
      13) Status of correction of deficient items.

14) Field observations.
15) Status of RFIs.
16) Status of proposal requests.
17) Pending changes.
18) Status of Change Orders.
19) Pending claims and disputes.
20) Documentation of information for payment requests.

3. Notes: Construction Manager will conduct the meeting will record and distribute meeting notes to Owner, Architect and Contractor.
4. Reporting: Distribute notes of the meeting to each party present and to parties who should have been present.
   a. Schedule Updating: Contractor shall update the Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized.

1.7 REQUESTS FOR INTERPRETATION (RFIs)

A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI via the web-based project management software.
   1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
   2. RFIs shall be submitted to the Construction Manager in the specified format.
   3. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.

B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:
   1. Project name.
   2. Project number
   3. Date.
   4. Name of Contractor.
   5. Name of Architect and Construction Manager.
   6. RFI number, numbered sequentially.
   7. Specification Section number and title and related paragraphs, as appropriate.
   8. Drawing number and detail references, as appropriate.
   9. Field dimensions and conditions, as appropriate.
   10. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
   11. Contractor's signature.
   12. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.

C. Architect's Action: Architect will review each RFI, determine action required, and return it. Allow fourteen (14) working days for Architect's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.

1. The following RFIs will be returned without action:
   a. Requests for approval of submittals.
   b. Requests for approval of substitutions.
   c. Requests for coordination information already indicated in the Contract Documents.
   d. Requests for adjustments in the Contract Time or the Contract Sum.
   e. Requests for interpretation of Architect's actions on submittals.
   f. Incomplete RFIs or RFIs with numerous errors.
2. Architect's action may include a request for additional information, in which case Architect's time for response will start again.
3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to **procedures defined in the Contract Documents including Division F, Section 21.**
   a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within ten (10) days of receipt of the RFI response.

D. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven (7) days if Contractor disagrees with response.

E. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log (CSI Log Form 13.2B) weekly. Include the following:
1. Project name.
2. Name and address of Contractor.
3. Name and address of Architect.
4. RFI number including RFIs that were dropped and not submitted.
5. RFI description.
6. Date the RFI was submitted.
7. Date Architect's response was received.
8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01 32 19 SUBMITTAL SCHEDULES / DAILY REPORTS / FIELD REPORTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Submittals Schedule.
   2. Daily construction reports.
   3. Field condition reports.

1.2 DEFINITIONS

A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
   1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
   2. Predecessor Activity: An activity that precedes another activity in the network.
   3. Successor Activity: An activity that follows another activity in the network.

B. Fragnet: A partial or fragmentary network that breaks down activities into smaller activities for greater detail.

C. Major Area: A story of construction, a separate building, or a similar significant construction element.

1.3 SUBMITTALS

A. Submittals Schedule: Submit via the web-based project management software. Arrange the following information in a tabular format:
   1. Scheduled date for first submittal.
   2. Specification Section number and title.
   3. Submittal category (action or informational).
   4. Name of subcontractor.
   5. Description of the Work covered.
   6. Scheduled date for Architect's final release or approval.

B. Daily Construction Reports: Submit PDF file via the web-based project management software prior to close-of-business on the day covered by the report.

C. Field Condition Reports: Submit PDF file via the web-based project management software at time of discovery of differing conditions.

1.4 COORDINATION

A. Coordinate preparation and processing of reports with performance of construction activities and with scheduling and reporting of separate contractors.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, re-submittal, ordering, manufacturing, fabrication, and delivery when establishing dates.
   1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
   2. Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

2.2 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
   1. List of subcontractors at Project site and quantities relating to labor force.
   2. Equipment at Project site.
   3. Material deliveries.
   4. High and low temperatures and general weather conditions.
   5. Accidents.
   6. Stoppages, delays, shortages, and losses.
   7. Meter readings and similar recordings.
   8. Orders and requests of authorities having jurisdiction.
   9. Services connected and disconnected.
   10. Equipment or system tests and startups.
   11. Progress on any schedule activity, including all related activity IDs.

B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Submit with a request for interpretation [**on CSI Form 13.2A**]. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

PART 3 - EXECUTION – (Not Used)

- END OF SECTION-

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Architect's and Construction Manager's responsive action.

B. Informational Submittals: Written and graphic information and physical samples that do not require Architect's and Construction Manager's responsive action. Submittals may be rejected for not complying with requirements.

1.3 ACTION SUBMITTALS

A. Submittal Schedule: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or modifications to submittals noted by the Architect and Construction Manager and additional time for handling and reviewing submittals required by those corrections.

1.4 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
   a. Architect and Construction Manager reserve the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

B. Processing Time: Allow time for submittal review, including time for re-submittals, as follows. Time for review shall commence on Architect's receipt of submittal. Contractor is to notify the Architect and Construction Manager when new materials for review have been posted to the designated web-based project management software. Time will begin upon successful download of that information. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including re-submittals.

1. Initial Review: Allow fourteen (14) calendar days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Construction Manager will advise Contractor when a submittal being processed must be delayed for coordination.

2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.

3. Resubmittal Review: Allow fourteen (14) calendar days for review of each re-submittal.

C. Architect's Digital Data Files: Electronic copies of digital data files of the Contract Drawings will be provided by Architect for Contractor's use in preparing submittals.

1. Architect will furnish Contractor one set of digital data drawing files of the Contract Drawings for use in preparing Shop Drawings and Project record drawings.

a. Architect makes no representations as to the accuracy or completeness of digital data drawing files as they relate to the Contract Drawings.

b. Contractor shall execute a data licensing agreement in the form of AIA Document C106, Digital Data Licensing Agreement as well as any further waivers required by the Architect.

D. Submittals are to be submitted electronically via the web-based project management software.

1. The following submittals are to be submitted electronically:

a. Product Data

b. Shop Drawings

c. Certifications

d. Test Data

e. Schedules

2. Samples shall not be submitted electronically but a transmittal should be to document delivery of such samples.

E. Identification and Information: Place a permanent label or title block on each cover of submittal item for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.

2. Provide a space approximately 6x8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Architect and Construction Manager.

3. Include the following information for processing and recording action taken:

a. Project name.

b. Date.

c. Name of Architect.

d. Name of Construction Manager.

e. Name of Contractor.

f. Name of subcontractor.

g. Name of supplier.

h. Name of manufacturer.

i. Submittal number or other unique identifier, including revision identifier.

1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Re-submittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).

j. Number and title of appropriate Specification Section.

k. Drawing number and detail references, as appropriate.

l. Location(s) where product is to be installed, as appropriate.

m. Other necessary identification.

F. Identification and Information: Identify and incorporate information in each electronic submittal file as follows:

1. Assemble complete submittal package into a single indexed file with links enabling navigation to each item.

2. Name file with submittal number or other unique identifier, including revision identifier.

a. File name shall use project identifier and Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01-LNHS). Re-submittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A-LNHS).

3. Provide means for insertion to permanently record Contractor's review and approval markings and action taken by Architect and Construction Manager.

4. Include the following information on an inserted cover sheet:

a. Project name.

b. Date.

c. Name and address of Architect.

d. Name of Construction Manager.

e. Name of Contractor.

f. Name of firm or entity that prepared submittal.

g. Name of subcontractor.

h. Name of supplier.

i. Name of Manufacturer

j. Number and title of appropriate Specification Section.

k. Drawing number and detail references, as appropriate.

l. Location(s) where product is to be installed, as appropriate.

m. Related physical samples submitted directly.

n. Other necessary identification.

G. Options: Identify options requiring selection by the Architect.

H. Deviations: Highlight, encircle, and otherwise specifically identify deviations from the Contract Documents on submittals.

I. Additional Paper Copies: Unless additional copies are required for final submittal, and unless Architect or Construction Manager observes noncompliance with provisions in the Contract Documents, initial electronic submittal may serve as final submittal.

J. Transmittal: Assemble each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect and Construction Manager will return submittals, without review, received from sources other than Contractor.

1. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Architect and Construction Manager on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same identification information as related submittal.

K. Re-submittals: Make re-submittals in same form as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision.
3. Resubmit submittals until they are marked with approval notation from Architect's and Construction Manager's action stamp.

L. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

M. Use for Construction: Retain complete set of paper copies of submittals on Project site. Use only final submittals that are marked with approval notation from Architect's and Construction Manager's action stamp.

1.5 CONTRACTOR'S USE OF ARCHITECT'S CAD FILES

A. At Contractor's written request, copies of Architect's CAD files of select plans will be provided to Contractor for Contractor's use in connection with Project, subject to the following conditions.

1. Only major site/floor/ceiling/roof plans, or building elevations/sections will be provided.
2. Wall section, details, schedules will not be provided.

3. Title blocks will be removed from the file.
4. Notes and dimensions may be removed from the file.
5. Compliance of the requests for consultant files is at the discretion of the consultant.
6. The following disclaimer will be added to the file:

DISCLAIMER AND INDEMNIFICATION AGREEMENT FOR
COMPUTER-BASED INFORMATION

The attached computer-based information for the **Construction of Fire Station 86** are provided to **(The User**) as a courtesy for their sole convenience. The User recognizes that computer-based information is easily changeable, that changes are difficult to detect and that use or conversion of the information provided may introduce errors, inaccuracies or anomalies that the Architect and their consultants can neither predict nor control. The delivery of this electronic data does not constitute the delivery of the professional work product of the Architect shall not be responsible for any modifications made to the electronic files or any products derived from the electronic files which are not prepared by us. By accepting and utilizing this electronic data in lieu of the corresponding drawings and specifications prepared by the Architect, the User agrees that such data is an instrument of service of the Architect, who shall be deemed to be the author of the drawings and data, and shall retain all common law, statutory law and other rights, including copyrights. The User, by accepting the electronic files, agrees to assume all risk and liabilities associated with the use of the information provided by the Architect and understand the Architect makes no claim or warranty as to the suitability or usefulness of the information for any purpose. The User also agrees, to the fullest extent permitted by law, to hold harmless and indemnify the Architect from and against any and all claims, liabilities, losses, damages and costs, including but not limited to attorney's fees, arising from or in connection with the use, misuse, modification, or misinterpretation of the electronic data provided by the Architect. Use of the attached computer-based information indicates acceptance and constitutes agreement to abide by the terms and conditions of this agreement.

PART 2 - PRODUCTS

2.1 SUBMITTAL PROCEDURES

A. General Submittal Procedure Requirements:

1. Post electronic submittals as PDF electronic files directly to the web-based project management software (Prolog Converge). Notify the Architect and Construction Manager of the presence of the submittal(s) via email with identification of the specific materials posted. In web-based project management software, include link for all submittal register items associated with the submittal package. Where possible, endeavor to include all required action submittals for that specification section.

a. Architect, through Construction Manager, will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.

2. Submit electronic submittals via email as PDF files.
   a. Architect will return annotated file. Annotate and retain one copy of file as an electronic Project record document file.
3. Closeout Submittals and Maintenance Material Submittals: Comply with requirements specified "Closeout Procedures."
4. Certificates and Certifications Submittals: Provide a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
   a. Provide a digital signature with digital certificate on electronically-submitted certificates and certifications where indicated.
   b. Provide a notarized statement on original paper copy certificates and certifications where indicated.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:
   a. Manufacturer's catalog cuts.
   b. Manufacturer's product specifications.
   c. Standard color charts.
   d. Statement of compliance with specified referenced standards.
   e. Testing by recognized testing agency.
   f. Application of testing agency labels and seals.
   g. Notation of coordination requirements.
   h. Availability and delivery time information.
4. For equipment, include the following in addition to the above, as applicable:
   a. Wiring diagrams showing factory-installed wiring.
   b. Printed performance curves.
   c. Operational range diagrams.
   d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.
5. Submit Product Data before or concurrent with Samples.
6. Submit Product Data in the following format:
   a. PDF electronic file with transmittal as noted above.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data. Submittals based upon Architect's digital data drawing files will be permitted.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
   a. Identification of products.
   b. Schedules.
   c. Compliance with specified standards.
   d. Notation of coordination requirements.
   e. Notation of dimensions established by field measurement.
   f. Relationship and attachment to adjoining construction clearly indicated.
   g. Seal and signature of professional engineer if specified.
2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 30 by 42 inches. Provide hard copies as required by the Architect and Construction Manager
3. Submit Shop Drawings in the following format:
   a. PDF electronic file.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package. Provide transmittal listing all samples submitted along with quantities.
2. Identification: Attach label on unexposed side of Samples that includes the following:
   a. Generic description of Sample.
   b. Product name and name of manufacturer.
   c. Sample source.
   d. Number and title of applicable Specification Section.
3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
   a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
   b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
   a. Number of Samples: Submit one (1) full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal, through Construction Manager, with options selected.
5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for

use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

a. Number of Samples: Submit three (3) sets of Samples. Architect will retain two (2) Sample sets; remainder will be returned. Mark up and retain one returned sample set as a project record sample.

1) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three (3) sets of paired units that show approximate limits of variations.

E. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Submit product schedule in the following format:
   a. PDF electronic file.

F. Contractor's Construction Schedule: Comply with requirements specified in Section 01 32 16 "Construction Progress Document."

G. Application for Payment: Comply with requirements specified in Section 01 29 00 “Payment Procedures."

H. Schedule of Values: Comply with requirements specified in Section 01 29 00 "Payment Procedures."

I. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Wherever possible, including CSI numbers with description of work being completed. Also, provide DIR numbers for all subcontractors and vendors listed. Provide an updated list when any changes take place along with and explanation of what changed and why.

1. Submit subcontract list in the following format:
   a. PDF electronic file.

J. Coordination Drawings: Comply with requirements specified in Section 01 31 00 "Project Management and Coordination."

K. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

L. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on American Welding Society (AWS) forms. Include names of firms and personnel certified.

M. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

N. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

O. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

P. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

Q. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

R. Product Test Reports: Submit written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

S. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.

T. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

U. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

V. Field Test Reports: Submit reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

W. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

2.2 DELEGATED-DESIGN SERVICES (Including DEFERRED APPROVALS)

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.

B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally-signed PDF electronic file and three (3) paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Action and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect and Construction Manager.

B. Project Closeout and Maintenance/Material Submittals: Refer to requirements in Section 01 77 00 "Closeout Procedures."

C. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S AND CONSTRUCTION MANAGER'S ACTION

A. General: Construction Manager will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Architect and Construction Manager will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:
   1. Final Unrestricted Release: Where the submittal is marked "No Exceptions Taken," the Work covered by the submittal may proceed provided it complies with the Contract Documents. Final acceptance will depend on that compliance.
   2. Final-but-Restricted Release: Where the submittal is marked "Reviewed with Exceptions as Noted," the Work covered by the submittal may proceed provided it complies with both Architect's notations and corrections on the submittal and the Contract Documents. Final acceptance will depend on that compliance.
   3. Returned for Resubmittal: Where the submittal is marked "Revise and Resubmit," do not proceed with the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity for the product submitted. Revise or prepare a new submittal according to Architect's notations and corrections.
   4. Rejected: Where the submittal is marked "Rejected," do not proceed with the Work covered by the submittal. Prepare a new submittal for a product that complies with the Contract Documents.
   5. Incomplete: Where the submittal is marked "Submit Specified Item," do not proceed with the Work covered by the submittal. Prepare additional information requested, or required by the Contract Documents, that indicates compliance with requirements.

C. Informational Submittals: Architect and Construction Manager will review each submittal and will not return it or will return it if it does not comply with requirements. Construction Manager will forward each submittal to appropriate party.

D. Incomplete submittals are not acceptable, will be considered nonresponsive, and will be returned without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION

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PART 1 - GENERAL

1.1 DESCRIPTION

A. The work of this section consists of implementing measures to prevent Storm Water Pollution during construction activities, in accordance with Federal, State, and local regulations, and in accordance with the Storm Water Pollution Prevention Plan (SWPPP) to be prepared for this project.

1.2 SUBMITTALS

A. Submit SWPPP to Owner after contract award and before the preconstruction conference.

B. Plans showing proposed arrangements and methods for control of erosion, sedimentation, and pollutant conveyance in storm water resulting from construction activities (Sheet C-7.2).The contractor shall provide final arrangement, methods of control and conveyance in the Storm Water Pollution Prevention Plan that satisfies all State NPDES permit requirements.

C. Provide sufficient information for evaluation of the following:
   1. Erosion protection measures and products
   2. Drainage management strategies
   3. Surface restoration

D. Submit schedules for inspection and monitoring of all SWPPP measures.

E. Submit manufacturer's product information and installation recommendations for silt fence, filter fabric and erosion control blanket, straw bales, and any other materials proposed for use on this project.

F. Contractor shall register on the State Water Resources Control Board (SWRCB) on- line Storm Water Multiple Application and Report Tracking System (SMARTS) database and submit the User Identification (ID) to the Owner. Owner will file a Notice of Intent (NOI) and link the Contractor User ID as a Data Entry Person for required entries (i.e., SWPPP, Annual Reports, Ad Hoc Reports) in accordance with the determined Risk Level monitoring and sampling requirements.

1.3 QUALITY ASSURANCE

A. Before commencing construction activities, such as grading, excavation or filling in any part of the site, Contractor shall plan for temporary structures to guide runoff away from the work area and to capture eroded material before it reaches natural water courses. The measures shall be in accordance with reviewed and approved SWPPP.

B. Arrange construction activities to minimize erosion to the maximum practical extent. Clearing, excavation, and grading shall be limited to those areas of the project site necessary for construction. Minimize the area exposed and unprotected.

C. Clearly mark and delineate the limits of work activities. Do not allow equipment to operate outside the limits of work or to disturb existing vegetation. Complete excavation and grading during the dryseason to the maximum extent possible.

1.4 REGULATORY REQUIREMENTS

A. The Contractor shall comply with provisions of Federal, State, and local regulations and requirements that govern the Contractor's operations and storm water and non- storm water discharges from the project site and areas outside the project limits during construction.

B. The project site is more than one acre and therefore requires compliance with the State Water Resources Control Board statewide general permit entitled "Order No. 2009-0009–DWQ (as amended by Order No. 2010-0014-DWQ), National Pollutant Discharge Elimination System General Permit No. CAS000002, Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction and Land Disturbance Activities" (Construction General Permit) that regulates discharges of storm water and non-storm water from construction activities disturbing one acre or more of land surface, or that are part of a common plan of development. The Construction General Permit is available for review at:

http://www.waterboards.ca.gov/water_issues/programs/stormwater/

This project shall conform to applicable provisions of this Permit and modifications thereto.

C. This project lies within the boundaries of the San Francisco Bay Region (2) Regional Water Quality Control Board (SFRWQCB). The SFRWQCB has issued Waste Discharge Requirements and National Pollutant Discharge Elimination System (NPDES) Permit for the discharge of stormwater runoff from the municipal separate storm sewer systems (MS4s) including construction sites (San Francisco Bay Region Municipal Regional Stormwater NPDES Permit Order No. R2-2015-0049 NPDES Permit No. CAS612008 November 19, 2015). The MS4 Regional Stormwater NPDES Permit is available to review at:

https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/stormwater/Municipal/R2_2015_0049_amended.pdf

This project shall conform to applicable provisions of this Permit and modifications thereto.

D. Storm Water Pollution Prevention Plan (SWPPP)

1. The SWPPP will include a description of best management practices (BMPs) that will be implemented to reduce the pollutants in stormwater and non-stormwater discharges to assure compliance with the terms and conditions of the Construction

General Permit.

2. A Qualified Stormwater Developer (QSD) shall prepare the SWPPP and a Qualified Stormwater Practitioner shall ensure implementation of the SWPPP.

3. The SWPPP shall include the following information and forms:

   a. Site description
   b. Expected sequencing of operations and construction schedule
   c. Weather monitoring procedure
   d. Descriptions and details of erosion controls, including dust control
   e. Erosion control plans
   f. Controls for other potential onsite storm water pollutants
   g. Applicable specifications
   h. Maintenance and inspection procedures and forms
   i. Description of potential non-storm water discharges at site
   j. Notice of Intent (NOI) form
   k. Notice of Termination (NOT) form
   l. QSD/QSP Certification forms
   m. Other record keeping forms and procedures
   n. Good housekeeping practices and procedures, including vehicle wash-down areas, protection of equipment storage and maintenance areas, and sweeping of roadways related to hauling activities

4. The Owner will review the draft SWPPP. Contractor QSD will address Owner review comments and submit revised SWPPP for Owner approval. Upon Owner approval, Contractor QSD and Owner representative will sign the approved SWPPP.

5. Contractor will upload approved SWPPP onto SMARTS database for Notice of Intent (NOI) submittal.

6. When the SWRCB approves the NOI, the SWPPP will be the document in force on the project.

7. Place the SWPPP and all updates in a three-ring binder so that completed inspection forms and other records may be inserted. The Contractor shall maintain a copy of the SWPPP and all associated records and forms on site throughout the construction period.

8. The SWPPP shall be available for public inspection. The Contractor shall notify the Owner immediately upon request from the regulatory agencies to enter, inspect, sample, monitor, or otherwise access the project site or the Contractor's records pertaining to water pollution control work. The Contractor and the Owner shall provide copies of correspondence, notices of violation, enforcement actions, or proposed fines by regulatory agencies to the requesting regulatory agency.

9. Implement the SWPPP as required throughout the construction period and maintain all erosion control elements in proper working order until final acceptance of project.

10. Do not perform clearing and grubbing or earthwork until applicable BMPs have been installed.

11. Prior to construction, the Contractor and all subcontractors shall sign certifications (included in the SWPPP) that they understand the requirements of the Construction General Permit and SWPPP. All Contractor and subcontractor crews shall comply with the requirements of the Construction General Permit under the supervision of the Contractor QSP who will be responsible for implementing the SWPPP. The Contractor QSP shall ensure that emergency procedures and the SWPPP are updated as needed and available for inspection. The SWPPP (including inspection forms) and all data used to complete the NOI shall be provided to the Owner at the completion of the project.

12. SWPPP Inspections and Amendments

    a. The Contractor QSP and/or trained crew under QSP supervision will perform weekly inspections of the project site in accordance with the SWPPP. Inspections shall be documented on forms provided in the SWPPP binder.

    b. It may be necessary to revise the SWPPP during construction to make necessary improvements or to respond to unforeseen conditions noted during construction or site inspections. For that purpose, the SWPPP shall specify the mechanism whereby revisions may be proposed by the Contractor or the Owner and incorporated into the SWPPP, including review and acceptance of minor changes. The Contractor and the Owner will jointly accept and sign each revision to the SWPPP before implementation. Accepted modifications will be implemented within 7 calendar days following the date of the inspection when deficiencies or necessary corrections are first noted.

    c. Temporary erosion and pollution control measures shall be used to correct conditions that develop during construction that were not foreseen during design, that are needed prior to installation of permanent control features, or that are needed temporarily to control erosion that developed during normal construction practices but are not associated with permanent control features on the project.

    d. Provide additional temporary erosion and pollution controls made necessary by Contractor's errors or negligence at no additional cost to the Owner.

E. Notice of Intent (NOI)

1. Owner will complete NOI form on SMARTS and submit to SWRCB after accepted SWPPP has been uploaded by Contractor.

2. Annual Reports are due to the SWRCB SMARTS by September 1 of each year. Contractor shall submit Annual Reports and any Ad Hoc Reports onto SMARTS by August 15 for Owner review.

F. Notice of Termination (NOT)

G. Upon final acceptance, the Owner will file the NOT.

1.5 PROJECT CONDITIONS

A. The Contractor shall maintain records of work performed on the sediment control structures.

B. The Contractor shall not remove any erosion or sediment control measure without prior permission from the Owner.

C. The Contractor shall obtain approval from the Owner prior to making changes to erosion control plans.

1.6 SEQUENCE OF CONSTRUCTION

A. The Contractor shall be responsible for arranging and conducting an Erosion and Sediment Control meeting/briefing to inform all parties scheduled to be on-site during the project of the measures to be implemented for proper erosion and sediment control (may be included as part of the preconstruction meeting).

1. Installation of silt fences, storm drain protection, and all other forms of erosion and sediment control shall not begin until after this meeting has occurred.

B. The Contractor shall notify the Owner in writing and by telephone of the following events:

1. The required erosion and sediment control meeting/briefing.
2. Following installation of required sediment control structures.
3. Prior to removal of or modification to sediment control structures.
4. Prior to removal of all sediment control structures.

C. Silt fences, storm drain protection, and all other forms of erosion and sediment control shall be installed, inspected, and accepted by the Contractor before beginning any utility excavation.

D. Temporary silt fences shall be installed around any stockpiles and/or excavated material that cannot be backfilled during the same day in which it was excavated. Temporary silt fences shall also be placed immediately downstream of any utility trench that has not been backfilled at the end of the working day. Temporary silt fences shall be installed prior to leaving the work site for the day.

E. Silt fences and storm drain protection shall be inspected by the Contractor weekly. Repairs to these devices shall be completed prior to leaving the work site for the day.

F. The Contractor shall prevent the deposition of materials onto paved areas. The Contractor shall inspect the paved areas for deposited materials weekly and remove the materials immediately.

G. Silt fences shall be removed with permission of the Owner within 20 working days

after final acceptance of the project and/or after the establishment of permanent stabilization of all excavations and fill areas.

PART 2 - PRODUCTS

2.1 EQUIPMENT

A. Before the work begins, sufficient equipment shall be available on the site to assure that the operation and adequacy of the erosion control plans can be continuously maintained.

2.2 EROSION CONTROL MEASURES

A. Erosion control measures shall consist of silt fencing or equivalent (eg. wattles, etc.), barrier protectors, straw bales, temporary soil retention blankets, excelsior drainage filters, sediment traps and berms.

B. Berms and excelsior drainage filters shall be used to form sediment traps and to control run- on and run-off into other areas, including creeks, streams, marshes, access roads, well areas, and the staging areas.

C. Erosion control measures shall be used to contain only direct precipitation in the construction zone. The contained water shall be allowed to percolate into the ground or drain slowly through the drainage filter sediment traps.

D. Earthen sediment traps or holding ponds shall not be used unless accepted by the Owner.

PART 3 - EXECUTION

3.1 GENERAL DESCRIPTION

A. Furnish, install, maintain, and operate necessary control measures and other equipment necessary to prevent erosion to the maximum extent practical, including implementation of Best Management Practices (BMPs).
   1. Temporary measures shall be to Contractor's own design and Contractor shall be solely responsible for risks related to the management of erosion control during construction.

B. Effective measures shall be initiated prior to the commencement of clearing, grading, excavation, or other operations that will disturb the natural erosion protection.

C. Schedule work to expose areas subject to erosion for the shortest possible time, and preserve natural vegetation to the greatest extent practicable. Temporary storage and construction buildings shall be located, and construction traffic routed, to minimize erosion. Temporary fast-growing vegetation or other suitable ground cover shall be provided as necessary to control runoff.

3.2 METHODS

A. Construct berms to reduce runoff velocity as well as direct surface runoff around and away from all fuel containment, storage, and borrow areas.

B. Divert surface runoff around and away from cut and fill slopes by constructing berms or ditches at the base of disturbed slopes. Provide conveyance for the runoff in temporary pipes or protected channels to temporary sediment traps.

C. Place drainage filters around all catch basins to create sediment traps to control run- off from the construction area.

D. Excess water used for dust control shall be contained within the demolition areas by the erosion control measures.

3.3 MAINTENANCE OF TEMPORARY FACILITIES

A. Inspect erosion and sediment control structures weekly. Ensure erosion and sediment control structures remain effective throughout excavation and grading operations. Relocate structures as necessary.

B. Inspect control structures after each significant rainfall. Promptly repair breaches which occur.

C. The Contractor shall remove entrapped sediment from behind excelsior drainage filter after each storm.

3.4 DISPOSAL OF SEDIMENT FROM STORM WATER POLLUTION CONTROL STRUCTURES

A. Sediment excavated from temporary sediment control structures shall be disposed on the site with general fill, or with topsoil. Sediment shall be allowed to dry out as required before reuse.

B. Contractor shall place the sediment removed from traps and other structures where it will not enter a storm drain or watercourse and where it will not immediately reenter the basin.

3.5 REMOVAL OF TEMPORARY STORM WATER POLLUTION CONTROL MEASURES

A. All temporary control measures shall be removed with permission of the Owner within 20 working days after final acceptance of the Project or once grading is completed and slopes have stabilized.

SWPPP Contents

a. SWPPP Certifications and Approval
b. Risk Level
c. Table of Contents
d. Qualified SWPPP Developer
e. Legally Responsible Person
f. Amendment Log
g. SWPPP Requirements
   - Permit registration documents
   - SWPPP availability and implementation
   - SWPPP amendments
   - Retention of records
   - Required non-compliance reporting
   - Annual report
   - Changes to permit coverage
   - Notice of Termination
h. Project Information
   - Site description
   - Existing conditions
   - Existing drainage
   - Geology and groundwater
   - Project description
   - Developed condition
   - Permits and governing documents
   - Stormwater run-on from off-site areas
   - Findings of the construction site sediment and receiving water risk determination
   - Construction schedule
   - Potential construction activity and pollutant sources
   - Identification of non-stormwater discharges
   - Required site map information
i. Best Management Practices
   - Schedule for BMP implementation
   - Erosion and sediment control
   - Non-stormwater controls and waste and materials management
   - Post-construction stormwater management measures
j. BMP inspection and maintenance
   - Rain Event Action Plans
k. Training
l. Responsible parties and operators
   - Responsible parties

- Contractor list

m. Construction Monitoring Program
- Weather and rain event tracking
- Monitoring locations
- Safety and monitoring exemptions
- Visual monitoring
- Routine observations and inspections: Routine BMP inspections, Non-stormwater discharge observations
- Rain-event triggered observations and inspections: Visual observations prior to a forecasted qualifying rain event, BMP inspections during an extended storm event, Visual observations following a qualifying rain event
- Visual monitoring procedures
- Visual monitoring follow-up and reporting
- Visual monitoring locations
- Water quality sampling and analysis
- Sampling and analysis plan for non-visible pollutants in stormwater runoff discharges: Sampling scheduled, sampling locations, monitoring preparation, analytical constituents, sample collection, sample analysis, data evaluation and reporting
- Sampling and analysis plan for pH and turbidity and stormwater runoff discharges: Sampling schedule, sampling locations, monitoring preparation, field parameters, sample collection, field measurements, data evaluation and reporting
- Sampling and analysis plan for non-stormwater discharges: Sampling schedule, sampling locations, monitoring preparation, analytical constituents, sample collection, sample analysis, data evaluation and reporting
- Additional monitoring following an NEL exceedance
- Training of sampling personnel
- Sample collection and handling
- Sample documentation procedures
- Records retention

n. Attachments
- Construction General Permit
- Risk Level calculations
- Water Pollution Control Drawings
- Permit Registration Documents/Amendments
- QSD/QSP Certifications
- SWPPP Amendment Certifications
- Construction Schedule

- Construction Activities, Materials Used, and Associated Pollutants
- CASQA Stormwater BMP Handbook Portal: Construction Fact Sheets
- BMP Inspection Form
- Training Reporting Form
- Weather forecast reports
- Monitoring records
- Field meter instructions

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.
   1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and control procedures that facilitate compliance with the Contract Document requirements.
   2. Requirements for Contractor to provide quality-assurance and control services required by Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
   3. Specific test and inspection requirements are not specified in this Section.

1.2 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by Architect.

C. Mockups: Full-size, physical assemblies that are constructed on-site. Mockups are used to verify selections made under sample submittals, to demonstrate aesthetic effects and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Approved mockups establish the standard by which the Work will be judged.

D. Laboratory Mockups: Full-size, physical assemblies that are constructed at testing facility to verify performance characteristics.

E. Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.

F. Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to authorities

having jurisdiction, to establish product performance and compliance with industry standards.

G. Source Quality-Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.

H. Field Quality-Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

I. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

J. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
   1. Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to Tradespeople of the corresponding generic name.

K. Experienced: When used with an entity, "experienced" means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction. See specific specification sections for additional experience requirements.

1.3 CONFLICTING REQUIREMENTS

A. General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement as defined in the General Conditions. Refer uncertainties and requirements that are different, but apparently equal, to Architect for a decision before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Architect for a decision before proceeding.

1.4 SUBMITTALS

A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

B. Reports: Prepare and submit certified written reports that include the following:
   1. Date of issue.
   2. Project title and number.
   3. Name, address, and telephone number of testing agency.
   4. Dates and locations of samples and tests or inspections.
   5. Names of individuals making tests and inspections.
   6. Description of the Work and test and inspection method.
   7. Identification of product and Specification Section.
   8. Complete test or inspection data.
   9. Test and inspection results and an interpretation of test results.
   10. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
   11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
   12. Name and signature of laboratory inspector.
   13. Recommendations on retesting and re-inspecting.

C. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.5 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

C. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

D. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.

F. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
   1. Requirement for specialists shall not supersede building codes and regulations governing the Work.

G. Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, as documented according to ASTM E 548; and with additional qualifications specified in individual Sections; and where required by authorities having jurisdiction, that is acceptable to authorities.
   1. NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.
   2. NVLAP: A testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program.

H. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

I. Mockups: Before installing portions of the Work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
   1. Build mockups in location and of size indicated or, if not indicated, as directed by Architect.
   2. Notify Construction Manager seven (7) days in advance of dates and times when mockups will be constructed.
   3. Demonstrate the proposed range of aesthetic effects and workmanship.
   4. Obtain Architect's approval of mockups before starting work, fabrication, or construction.
   5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
   6. Demolish and remove mockups when directed, unless otherwise indicated.

J. Laboratory Mockups: Comply with requirements of preconstruction testing and those specified in individual Sections in Divisions 02 through 48.

1.6 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.
   1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.

2. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor (contract sum adjusted through change order procedures).

B. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.
   1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
      a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
   2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
   3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
   4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
   5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections.

D. Retesting/Re-inspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

E. Testing Agency Responsibilities: Cooperate with Architect and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
   1. Notify Architect and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
   2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
   3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
   4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
   5. Does not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.
   6. Do not perform any duties of Contractor.

F. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
   1. Access to the Work.
   2. Incidental labor and facilities necessary to facilitate tests and inspections.
   3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
   4. Facilities for storage and field curing of test samples.
   5. Delivery of samples to testing agencies.
   6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
   7. Security and protection for samples and for testing and inspecting equipment at Project site.

G. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and -control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
   1. Schedule times for tests, inspections, obtaining samples, and similar activities.

1.7 SPECIAL TESTS AND INSPECTIONS

A. Special Tests and Inspections: Owner will engage a qualified testing agency, special inspector and/or Essential Services Inspector to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner, and as follows:
   1. Verifying that manufacturer maintains detailed fabrication and quality-control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.
   2. Notifying Architect and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
   3. Submitting a certified written report of each test, inspection, and similar quality- control service to Architect with copy to Contractor and to authorities having jurisdiction.
   4. Submitting a final report of special tests and inspections at Substantial Completion, this includes a list of unresolved deficiencies.
   5. Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents.
   6. Retesting and reinspecting corrected work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

A. Test and Inspection Log: Prepare a record of tests and inspections. Include the

following:

1. Date test or inspection was conducted.
2. Description of the Work tested or inspected.
3. Date test or inspection results were transmitted to Architect.
4. Identification of testing agency or special inspector conducting test or inspection.

B. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Architect's and Construction Manager's reference during normal working hours.

3.2 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
2. Comply with the Contract Document requirements for "Cutting and Patching."

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION

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PART 1 – GENERAL

1.1 MOCK-UP SUMMARY

A. Mock-ups will be used to review of appearance, quality of workmanship, coordination, compatibility, and relationships with adjacent materials. Unless otherwise specifically indicated mock-ups shall be constructed in place at location directed by Architect. Approved mock ups may remain as part of the work.

1.2 SUBMITTALS

A. Mock-ups shall not be fabricated until after acceptance of required submittals for all materials to be incorporated into the mock-ups. This means that the Project schedule shall take into account early submittal of these components to the Architect.

B. Samples: Prior to construction of mock-ups, provide samples as specified in the respective Specification Sections included as part of the mock-ups.

1.3 QUALITY ASSURANCE

A. Design Concept: Mock-up requirements are intended to establish function, workmanship, finish, and color for conformance with the architectural design intent.

B. Purpose: To verify suitability of colors, finishes, and satisfactory integration of building materials and components indicated and required.

C. Performance: Mock-ups shall be constructed for the Architect's review for compliance with the Contract Documents and shall be used as a standard for the finalinstallation.

D. Make necessary additions and modifications to mock-ups as directed by the Architect.

E. Modify mock-ups, or construct or install new components if requested by the Architect, until final acceptance is obtained.

F. Mock-ups shall serve as the standard for subsequent work of like kind after approval by the Architect. Be prepared, at no additional cost to the Owner, to make as many modifications as required to achieve mock-ups that are acceptable to the Architect and of sufficient quality to serve as the standard for the complete Project.

G. Following acceptance, mock-ups shall serve as a performance standard of quality and appearance of the work it represents, including the interface with adjacent

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materials and components as applicable.

H. Coordinate fabrication, delivery, assembly, and installation with related materials to be included in the mock-ups. Construction of the mock-up assemblies shall be under the supervision of the same personnel who will be employed for the subsequentwork.

I. Maintain mock-ups in neat, clean condition until removal or final acceptance. Repair damage as required to maintain in condition suitable for review and approval.

J. Scheduling:

1. Construct mock-ups in a timely manner to permit review and modifications such that the work is not delayed.

2. Do not proceed with ordering of components or construction subject to mock-up approval until after approvals have been obtained.

3. Provide the Architect not less than 10 working days notice of the time each component is ready for review.

4. Include line item in the construction schedule for the building section mock-up, showing submittals, construction, review, and approval periods.

PART 2 – PRODUCTS

2.1 MATERIALS

A. As specified in the respective Sections of the Specifications.

PART 3 – EXECUTION

3.1 EXTERIOR BUILDING MOCK-UP

A. Provide building mock-up of building area indicated where directed by the Architect.

B. Purpose: Establish standards for work indicated and specified to be included in mock-ups to demonstrate quality of workmanship, materials, colors, and textures required by the Contract Documents. Include roof, roof overhang, soffits, windows, doors, glazing, sealants, siding and cladding, flashings, and other exterior materials.

1. Mock-up will be used by the Architect to test color and material alternatives and to approve final colors, textures, and workmanship.

2. Interior finishes will not be required to be installed on the interior side of the exterior building mock-up.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes requirements for temporary fencing, utilities, support facilities, and security and protection facilities.

1.2 DEFINITIONS

A. Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weather tight; exterior walls are insulated and weather tight; and all openings are closed with permanent construction or substantial temporary closures.

1.3 USE CHARGES

A. General: Cost or use charges for temporary facilities shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Construction Manager, Architect, occupants of Project, testing agencies, and authorities having jurisdiction.

B. Water Service: Water from Owner's existing water system is not available for use without metering and without payment of use charges. Contractor is responsible for coordination of this activity with the local municipality.

C. Electric Power Service: Contractor to provide connections and extensions of services as required for construction operations including the office trailers. Contractor will be responsible to coordinate and make arrangements with PG&E to provide temporary power to the construction site. Contractor will be responsible for all costs associated with the installation of temporary power and any and all use charges for the duration of the contract. **Contractor shall provide temporary power as required to allow for operation of office trailers, construction power and new modular building.** Temporary power from PG&E is available in the immediate area of the site, contractor shall pursue engineering and installation of temporary power at their own cost.

D. Internet Service/Data: Temporary hardwired service is not currently available in the immediate area of the site, but contractor may pursue engineering and installation of temporary hardwired service at their own cost. Contractor may need to pursue other options to meet the contractual temporary service requirements (satellite, etc.).

E. Temporary Fencing: Contractor to provide temporary fencing at the perimeter of the project site with adequate protection provided to pedestrians outside of the project site. If there is any exposure to falling objects outside of the project site then the Contractor must provide a covered walkway. Contractor shall comply with FAA Orders and Standards for temporary fencing installed at airside (aircraft parking areas). Contractor shall install fencing to secure FAA Parking areas near ATCT during work at ATCT parking lots.

1.4 SUBMITTALS

A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel and Construction Managers.

B. Erosion- and Sedimentation-Control Plan: Show compliance with requirements of EPA

Construction General Permit or authorities having jurisdiction, whichever is more stringent.

C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire prevention program.

1.5 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibility.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Temporary Chain-Link Fencing: Minimum 2-inch, 9-gage, galvanized steel, chain-link fence with privacy screening fabric mesh; minimum 6 feet high (8 feet at airside) with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Galvanized Steel posts will be required to be driven into the ground for support and stability or portable fencing, if appropriate, with sufficient hold down weight to prevent overturning.

2.2 TEMPORARY FACILITIES FOR PROJECT SITE

A. Field Offices for each site, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

B. Field Offices: Provide and maintain for the duration of the Work temporary offices on site for use by the Contractor and a separate onsite trailer for use by the Owner's representatives (including Owner, Construction Manager and the Architect).

1. **Owner's Representative.** This office shall be a self-contained construction trailer, minimum size 10' X 44', and shall be set up with an office at one end and an area for plans. The office will include a desk (minimum size of 30" X 60"), a rolling office chair and two (2) guest chairs. The plan area furnishings will include a 30" X 72" folding table, a small table with a coffee maker, (1) microwave, (1) mini refrigerator, (4) folding chairs, a plan table, a rolling plan rack, two trashcans, three (3) lockable 4 drawer filing cabinets, water cooler, fire extinguisher, smoke detector, and a complete set of unmarked Contract Documents for the Owner's Representative's use. The office shall also be equipped with a scanner/copier/printer and a dedicated data line. Two (2) dedicated parking spaces will be provided for use by the Construction Manager's staff.
2. Offices shall be equipped with secure wireless internet capabilities to allow for onsite users access to email and the internet.

3. Offices shall be provided with a door and lock with security bar and a window with a minimum size of 4 feet x 3 feet and security screen. Provide and maintain an electric heater and air conditioning along with adequate electric lighting for each office.

C. Office Supplies: The Contractor shall supply the field office of the Owner's Representative with (2) cases of 8-1/2 x 11 paper, (1) case of 11 x 17 paper, (1) box post-it notes, (1) box white-out tape, (1) stapler with staples, (1) box assorted binder clips, (1) box paperclips, (1) box of pens, (1) box of pencils, Printer/Copier Toner or Ink, (2) surge protectors, (1) 24' extension cord, (2) water cooler bottles, (1) box coffee cups, coffee, (3) rolls paper towels. Supplies shall be restocked monthly and/or on an as-needed basis.

D. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

E. Temporary Field Fencing: Provide fence size, material and privacy screen fabric mesh to encompass each site, furnish and installed, equipped for entrance of utility trucks (16- foot gates) and man gates for easy access.

F. Network Setup: The network shall have the following requirements:
1. The internet connection must be separate service and independent of the Contractor's and shall be the fastest speed available in the area with a minimum a 20-Meg upload / 20-Meg download speed. This should be accomplished via a hard-wired connection.
   a. Wired network connections must be provided at
      1) The Office, Planroom, and the Printer/Scanner.
   b. Reasonable access to power for the equipment must be provided.
2. If it is necessary to "piggyback" off of an existing hard-wired line, the line provided to the Owner's Representative shall be an unfiltered line, with no limitations set by the main line holder, such as access restrictions or DNS port blocking.
3. In the cases where a hard-wired connection is not available, the wireless connection provided must meet the same speed needs of 20-Meg upload / 20-Meg download. It shall also be of sufficient bandwidth to meet the needs of the staff.
4. In the case of sites where the internet speeds do not meet the above requirements, a cellular "hot-spot" is to be provided if resulting in a faster connection, along with a local storage device must be provided for the location to save the project data. The local storage device will be connected to the Kitchell network, and backed up during non-business hours to the Kitchell network server.

2.3 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
2. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return air grille in system and remove at end of construction.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION FOR PROJECT SITE

A. General: Install temporary service or connect to existing service.
   1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.

B. Electrical Power and Lighting:
   1. Contractor will furnish and pay for power during the course of the work to the extent power is not in the building(s) or on the Site. Contractor shall be responsible for providing temporary facilities required on the Site to point of intended use.
   2. Contractor shall furnish, wire for, install and maintain temporary electrical lights wherever it is necessary to provide illumination for the proper performance and/ or observe of the Work: a minimum of 20 foot-candles for rough work and 50 foot-candles for finish work.
   3. Contractor shall be responsible for maintaining existing lighting levels in the Project vicinity should temporary outage or service interruptions occur.

C. Sewers and Drainage: Provide temporary utilities to remove effluent lawfully.
   1. Connect temporary sewers to municipal system as directed by authorities having jurisdiction. Coordination is the responsibility of the Contractor.

D. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction and modular passenger terminal.

E. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities. Provide connection to existing sanitary sewer for temporary passenger terminal modular.

F. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.

G. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

H. Electric Power Service: It is the Contractor’s responsibility to coordinate with PG&E to obtain the temporary electrical service, including submission of services applications, load calculation, and single line diagrams. The Contractor will also be responsible for payment of

the monthly PG&E invoices and all other temporary requirements as outlined within the specification section.

Contractor shall provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations including office trailers.

1. See Section 1.3.C

I. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
   1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.3 Temporary Controls

A. Noise Control
   1. Contractor acknowledges that adjacent facilities may remain in operation during all or a portion of the Work, and it shall take all reasonable precaution to minimize noise as required by applicable lass and the Contract Documents.
   2. Notices of proposed noisy operations, including without limitation, operation of pneumatic demolition tools, concrete saws, and other equipment, shall be submitted to the City a minimum of forty-eight (48) hours in advance of their performance. Contractor responsible for obtaining all permits required for construction noise outside of the times allowable within the noise ordinance.
   3. Contractor to meet the Conditions of Approval related to Noise Control as defined in the Contract Documents.

B. Noise and Vibration
   1. Equipment and impact tools shall have intake and exhaust mufflers.
   2. Contractor shall cooperate with the City to minimize and /or cease the use of noisy and vibratory equipment if that equipment becomes objectionable by its longevity.
   3. Contractor to meet the Conditions of Approval related to noise and vibration as defined in the Contract Documents.

C. Dust and Dirt
   1. Contractor shall conduct demolition and construction operations to minimize the generation of dust & dirt, and prevent dust and dirt from interfering with the progress of the Work and from accumulating in the Work and adjacent areas including, without limitation, occupied facilities.
   2. Contractor shall periodically water exterior demolition and construction areas to minimize the generation of dust and dirt.
   3. Contractor shall ensure that all hauling equipment and trucks carrying loads of soil and debris shall have their loads sprayed with water or covered with tarpaulins, and as otherwise required by local and state ordinance.
   4. Contractor shall prevent dust and dirt from accumulating on walks, roadways, parking areas, and planting, and from washing into sewer and storm drain lines.
   5. Contractor to meet the Conditions of Approval related to dust and dirt as defined in the Contract Documents.
   6. Comply with FAA Orders and Standards.

3.4 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:
   1. Provide incombustible construction for offices, shops, and sheds located within

construction area or within thirty (30) feet of building lines. Comply with NFPA 241.

2. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas within construction limits indicated on Drawings.

1. Provide dust-control treatment that is nonpolluting and non-tracking. Reapply treatment as required to minimize dust.

C. Temporary Roads and Paved Areas: All areas are currently paved.

D. Traffic Controls: Comply with requirements of authorities having jurisdiction.

1. Protect existing site improvements to remain including curbs, pavement, and utilities.
2. Maintain access for fire-fighting equipment and access to fire hydrants.

E. Parking: Contractor is to provide temporary parking for construction personnel within confines of the designated construction site. If parking within the designated construction site becomes unavailable due to number of Trades, Subcontractors and Vendors, Contractor shall be responsible for coordinating with the City, or local jurisdiction for parking requirements, locations, permits, shuttle services, etc. Contractor is to review and follow all related Conditions of Approval, Laws and Regulations from the City of Ukiah.

F. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water. (refer to demolition drawings for specifics)

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.

G. Project Identification and Temporary Signs: Provide Project identification and other signs as indicated on drawings or required by the County or the City. Install signs where indicated to inform public and individuals seeking entrance to Project. Unauthorized signs are not permitted.

1. Provide temporary, directional signs for construction personnel and visitors.
2. Maintain and touchup signs so they are legible at all times.

H. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

3.5 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

B. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.

C. Stormwater Control: Comply with authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater

from heavy rains.

D. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Obtain extended warranty for Owner. Perform control operations lawfully, using environmentally safe materials.

E. Temporary Site Enclosure Fence: All costs associated with the install, monthly fencing rental fees and demobilization of the fencing will be the responsibility of the contractor. Furnish and install any additional site enclosure fence panels in a manner that will prevent people and animals from easily entering site except by entrance gates.
1. Temporary Fence: As required to enclose entire Project site or portion determined sufficient to accommodate construction operations and protection of the public. Operations include temporary offices, parking, staging areas, actual construction site.

F. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Contractor is responsible to ensure that the fencing and all gates are secured and locked prior to leaving the site on a daily basis to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

G. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

H. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weather-tight enclosure for building exterior.
1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.
2. Insulate partitions to provide noise protection to occupied areas.
3. Seal joints and perimeter. Equip partitions with dustproof doors and security locks.
4. Protect air-handling equipment.
5. Weather strip openings.
6. Provide walk-off mats at each entrance through temporary partition.

I. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
1. Smoking is **prohibited** in all construction areas.
2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.6 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and

abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.
   1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.

D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
   1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
   2. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section "Closeout Procedures."

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
   1. Construction layout.
   2. Field engineering and surveying.
   3. General installation of products.
   4. Cutting and patching.
   5. Progress cleaning.
   6. Starting and adjusting.
   7. Protection of installed construction.
   8. Correction of the Work.

1.2 SUBMITTALS

A. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.

B. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.

C. Survey reports and plots as detailed below.

1.3 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

B. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
   1. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as

intended or that results in increased maintenance or decreased operational life or safety.

1.4 EXAMINATION

A. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
   1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
   2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.

B. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
   1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
   2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
   3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
   4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

1.5 PREPARATION

A. Existing Utility Information: Furnish information to local utility that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

1.6 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.

B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.
1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish limits on use of Project site.
3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
4. Inform installers of lines and levels to which they must comply.
5. Check the location, level and plumb, of every major element as the Work progresses.
6. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
7. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

1.7 FIELD ENGINEERING

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

C. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

D. Final Property Survey: Prepare a final property survey showing significant features (real property) for Project. Include on the survey a certification, signed by land surveyor, that principal metes, bounds, lines, and levels of Project are accurately positioned as shown on the survey.
   1. Recording: At Substantial Completion, have the final property survey recorded by or with authorities having jurisdiction as the official "property survey."

1.8 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
   1. Make vertical work plumb and make horizontal work level.
   2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
   3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.

F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
   1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
   2. Allow for building movement, including thermal expansion and contraction.
   3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

1.9 CUTTING AND PATCHING

A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
   1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during installation or cutting and patching operations, by methods and with materials so as not to void existing warranties

C. Temporary Support: Provide temporary support of work to be cut.

D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

E. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable
   1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
   2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will minimize evidence of patching and refinishing.

F. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint, mortar, oils, putty, and similar materials from adjacent finished surfaces.

1.10 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
   1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
   2. Do not hold materials more than seven (7) days during normal weather or three (3) days if the temperature is expected to rise above 80 deg F.

3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
   1. Remove liquid spills promptly.
   2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

1.11 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

1.12 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions for temperature and relative humidity.

1.13 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements "Cutting and Patching."
   1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

B. See Divisions 2 through 48 Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1.2 SUBMITTALS

A. Cutting and Patching Proposal: Submit a proposal describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
   1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
   2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
   3. Products: List products to be used and firms or entities that will perform the Work.
   4. Dates: Indicate when cutting and patching will be performed.
   5. Utility Services and Mechanical/Electrical Systems: List services/systems that cutting and patching procedures will disturb or affect. List services/systems that will be relocated and those that will be temporarily out of service. Indicate how long services/systems will be disrupted.
   6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure.
   7. Architect's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.3 QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that result in increased maintenance or decreased operational life or safety.

C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, and result in

reducing their capacity to perform as intended, or that result in increased maintenance or decreased operational life or safety.

D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.

3.3 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
   1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
   1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
   2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
   3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
   4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
   5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
   6. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.
   1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
   2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
   3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
   4. Ceilings: Patch, repair, or re-hang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
   5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weathertight condition.

D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY – WASTE MANAGEMENT GOALS

A. Section includes administrative and procedural requirements for salvaging, recycling and disposing of nonhazardous demolition and construction waste.

B. The Owner has established that this Project shall generate the least amount of waste possible and processes that ensure the generation of as little waste as possible due to error, poor planning, breakage, mishandling, contamination, or other factors shall be employed.

C. Of the inevitable waste that is generated, as many of the waste materials as economically feasible shall be reused, salvaged, or recycled. Waste disposal in landfills shall be minimized.

1.2 DEFINITIONS

A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.

C. Disposal: Removal of off-site waste and subsequent sale, recycling, reuse or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

D. Hazardous: Exhibiting the characteristics of hazardous substances, i.e., ignitability, corrosivity, toxicity or reactivity.

E. Recyclable: The ability of a product or material to be recovered at the end of its life cycleand remanufactured into a new product for reuse by others.

F. Recycle: Recovery of waste from the Project site to another site for subsequent processing in preparation for reuse

G. Recycling: The process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for the purpose of recycling. Recycling does not include burning, incinerating, or thermally destroying waste.

H. Salvage: To remove a waste material from the Project site for subsequent sale or reuse in another facility.

I. Salvage and Reuse: Recovery of waste and subsequent incorporation into the Work

1.3 PERFORMANCE REQUIREMENTS

A. Develop and implement a waste management program resulting in an end-of-project rates for salvage/recycling of minimum 65 percent by weight or volume of the total waste generated by the project. Refer the Contra Costa Cal Green Construction and Demolition. Debris Recovery Program and follow the CalGreen Applicant Instructions (https://www.contracosta.ca.gov/DocumentCenter/View/61489/CalGreen-Applicant- Instructions---Non-Residential-Projects?bidId=).

B. Regulations: The Contractor shall be responsible for knowing and complying with regulatory requirements, Federal, State, and Local, pertaining to legal disposal of all construction and demolition waste materials.

C. Coordination: Coordinate the recycling of materials with Owner and Subcontractors as required to conform to the Construction Waste Management Plan.

D. Site Access and Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

1.4 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Waste Management Meetings: Conduct on-site waste management meetings with all subcontractors. Review and discuss the waste management plan, methods, procedures and each party's roles and responsibilities.

C. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.

D. Packing and Shipping

1. Shipping: Coordinate the schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
2. Packing: Arrange for the return of packing materials, such as wood pallets, where economically feasible.

E. Handling

1. Provide equipment and personnel to handle products by methods to prevent soiling or damage.
2. Promptly inspect shipments to assure products comply with requirements, quantities are correct, and products are undamaged.
3. Promptly return damaged shipments or incorrect orders to manufacturer for

credit or refund.

F. Storage: Store products in accordance with manufactures recommendations and periodically inspect to assure that stored products are undamaged and are maintained under required conditions.

G. Preparation

1. Storage and Protection:
   a. Designate receiving/storage areas for incoming material to be delivered according to installation schedule and to be placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
   b. Store and handle materials in a manner as to prevent loss from weather and other damage. Keep materials covered and off the ground, and store in a dry, secure area.
   c. Prevent contact with material that may cause corrosion, discoloration, or staining.
   d. Protect all materials and installations from damage by the activities of other trades.

H. Waste Management

1. Source separated waste: Separate, store, protect, and handle at the site identified recyclable and salvageable waste products in order to prevent contamination of materials and to maximize recyclability and salvageability of identified materials.
2. Comingled Waste: Waste may be commingled at the site and separated at a recycling facility.
3. Return: Set aside and protect missed-delivered and substandard products and materials and return to supplier for credit.
4. Reuse and Salvage: Set aside, sort, and protect separated products and materials for collection, re-use on site by contractor, and salvage by other.
5. Recycling: Arrange for timely pickups from the site or deliveries to recycling facility in order to prevent contamination of recyclable materials.

1.5 WASTE MANAGEMENT PLAN

A. General: Develop a waste management plan according to the requirements in this Section, as well as the requirements indicated in the LEED for Building Design and Construction New Construction Reference Guide, version 2009, under Materials and Resources Credit 2 – Construction Waste Management. Plan shall consist of the following sections: Waste Management Goals, Responsible Parties, Waste Identification, Waste Prevention and Diversion Measures, Contamination Prevention Measures, Communication and Education Measures, Onsite Recycling Operations, and Cost/Revenue Analysis. Distinguish between demolition and construction waste. Indicate quantities by weight or volume, but use same units of measure throughout waste management plan. The plan shall result in end-of-Project rates for salvage/recycling of minimum 65 percent by weight or volume of the total waste generated by the work. Refer the Contra Costa Cal Green Construction and Demolition Debris Recovery Program and follow the CalGreen applicant Instructions. (https://www.contracosta.ca.gov/DocumentCenter/View/61489/CalGreen-Applicant-Instructions---Non-Residential-Projects?bidId=).

B. Waste Identification: Indicate anticipated types and quantities of demolition, site- clearing and construction waste generated by the Work. Include estimated quantities and assumptions for estimates

C. The list of these materials is to include, at minimum, the following materials:

1. Cardboard.
2. Clean dimensional wood.
3. Beverage containers.
4. Land clearing debris.
5. Concrete.
6. Bricks.
7. Concrete Masonry Units (CMU).
8. Metals from banding, stud trim, ductwork, piping, rebar, roofing, other trim, steel, iron, galvanized sheet steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze.
9. Drywall.
10. Carpet and carpet pads.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 WASTE MANAGEMENT PLAN IMPLEMENTATION

A. Manager: The Contractor shall designate an on-site party (or parties) responsible for instructing workers and overseeing and documenting results of the Waste Management Plan for the Project.

B. Distribution: The Contractor shall distribute copies of the Waste Management Plan to the Job Site Foreman, each Subcontractor, the Owner, and the Owner's Representative.

C. Instruction and Training: The Contractor shall provide on-site instruction and train workers, subcontractors and suppliers of appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used.

D. Separation facilities: The Contractor shall layout and label a specific area to facilitate separation of materials for potential recycling, salvage, reuse, and return. Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid contamination of materials. Waste may be commingled at the site in a specific label area for pickup by the waste hauler and separated at a recycling facility.

E. Hazardous wastes: Hazardous wastes shall be separated, stored, and disposed of according to local regulations.

F. Contractor shall provide a monthly summary to the LEED Consultant with the following information:

G. The amount (in tons or cubic yards) of material landfilled from the Project, the identity of the landfill, the total amount of tipping fees paid at the landfill, and the total disposal cost. Include manifests, weight tickets, receipt, and invoices.

H. For each material recycled, reused, or salvaged from the Project, the amount (in tons or cubic yards), the date (removed from the jobsite, the receiving party, the transportation cost, the amount of any money paid or received for the recycled or salvaged material, and the net total cost or savings of salvage or recycling each material). Attach manifests, weight tickets, receipts, and invoices.

3.2 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

A. General: Recycle paper and beverage containers used by on-site workers.

B. Recycling Incentives: Revenues, savings, rebates, tax credits, and other incentives received for recycling waste materials shall accrue to Owner.

Preparation of Waste: Prepare and maintain recyclable waste materials according to recycling or reuse facility requirements. Maintain materials free of dirt, adhesives, solvents, petroleum contamination, and other substances deleterious to the recycling process.

C. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical according to approved construction waste management plan

D. Provide appropriately marked containers or bins for controlling recyclable waste until removed from Project site. Include list of acceptable and unacceptable materials at each container and bin. Regularly inspect bins for contamination.

E. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

F. Stockpile materials away from construction area. Do not store within drip line of remaining trees.

G. Store components off the ground and protect from the weather.

H. Remove recyclable waste from Owner's property per approved Waste Management Plan.

3.3 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of to accumulate on-site.

2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

3.4 INSTALLATION

A. Install product(s) per manufacturer's recommendations to reduce damage to or waste of materials by required replacement.

3.5 TRANSPORTATION

A. Transport materials in covered trucks to prevent contamination of product or littering of surrounding areas.

3.6 GENERAL CLEANING

A. Control accumulation of waste materials and trash. Recycle or dispose of off-site at intervals approved by the Owner and in compliance with waste management procedures.

B. Cleaning materials: Use cleaning materials that are non-hazardous.

3.7 FINAL CLEANING

A. Cleaning Materials: Only non-hazardous cleaning materials shall be used in the final cleanup.

B. Recycle, salvage, and return construction and demolition waste from Project.

C. Arrange for pick-up of salvageable materials in accordance with the Waste Management Plan.

D. Disposal Operations: Promptly and legally transport and dispose of any trash. Do not burn, bury, or otherwise dispose of trash on the Project site.

END OF SECTION

PART 1 – GENERAL

1.1 Section Includes

A. Cleaning throughout the construction period, and final project cleaning prior to the acceptance tour.

1.2 Quality Assurance

A. Inspection: Conduct daily inspection, and more often if necessary, to verify that requirements of cleanliness are being met.

B. Codes and Standards: In addition to the requirements specified herein, comply with pertinent requirements of authorities having jurisdiction.

PART 2 – PRODUCTS

2.1 Cleaning Materials and Equipment

A. Provide required personnel, equipment, and materials needed to maintain the specified standard of cleanliness.

2.2 Compatibility

A. Use cleaning materials and equipment that are compatible with the surfaces being cleaned, as recommended by the manufacturer of the material to be cleaned.

PART 3 – EXECUTION

3.1 Progress Cleaning

A. General:
1. Retain stored items in an orderly arrangement allowing maximum access, not impeding drainage or traffic, and providing the required protection of materials.
2. Do not allow the accumulation of scrap, debris, waste material, and other items not required for construction of this work. Debris shall be removed from the site and disposed of in a lawful manner. Disposal receipts or dump tickets shall be furnished to Architect upon request.
3. At least twice each month, and more often if necessary, remove scrap debris, and waste material from the job site.

4. Provide adequate storage for items awaiting removal from the job site, observing requirements for fire protection and protection of the ecology.

B. Site:

1. Daily, and more often if necessary, inspect the site and pick up all scrap, debris, and waste material. Remove items to the place designated for their storage. Flammable waste shall be kept in sealed metal containers until removed from the site.
2. Weekly, and more often if necessary, inspect, arrangements of materials stored on the site; restack, tidy, or otherwise service arrangements to meet the requirements specified above.
3. Maintain the site in a neat and orderly condition.

C. Structures:
1. Weekly, and more often if necessary, inspect the structures and pick up scrap, debris, and waste material. Remove items to the place designated for their storage.
2. Weekly, and more often if necessary, sweep interior spaces clean.
   a. “Clean”, for the purpose of this subparagraph, shall be interpreted as meaning free from dust and other material capable of being removed by use of reasonable effort and a handheld broom, i.e., “broom-clean”.
3. As required preparatory to installation of succeeding materials, clean the structures of pertinent portions thereof to the degree of cleanliness recommended by the manufacturer of the succeeding material, using equipment and materials required to achieve the required cleanliness.
4. Following the installation of finish floor materials, clean the finish floor daily, and more often if necessary, and while work is being performed in the space in which finish materials have been installed.
   a. “Clean”, for the purpose of this subparagraph, shall be interpreted as meaning free from foreign material that, in the opinion of the Architect, may be injurious to the finish floor material, i.e., “vacuum-clean”.

D. General: The General Conditions require general cleaning during construction. Prior to completion of the work, remove from the job site all tools, surplus materials, equipment, scrap, debris, and waste, conduct final progress cleaning as described below.

E. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to the condition expected in a normal, commercial building cleaning and maintenance program. Comply with manufacturer's instructions. Unless otherwise specifically directed by the Architect, water and broom clean paved areas on the site and public paved areas directly adjacent to the site. Remove resultant debris

F. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion.
1. Remove labels that are not permanent labels.

2. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.

G. Clean exposed exterior and interior hard-surfaced finishes to a dust-free condition, free of stains, films, and similar foreign substances. Restore reflective surfaces to their original condition. Leave concrete floors broom clean. Vacuum carpeted surfaces. Sweep and mop vinyl and rubber surfaces.

H. Structures:
3. Exterior: In areas affected by the work under this contract, visually inspect exterior surfaces and remove traces of soil, waste material, smudges, and other foreign matter. Remove traces of splashed material from adjacent surfaces. If necessary to achieve a uniform degree of exterior cleanliness, hose down the exterior of the structure.
4. In the event of stubborn stains not removable with water, the Architect may require light sandblasting or other cleaning at no additional cost to the District.

I. Interior: In areas affected by the work under this contract, visually inspect interior surfaces and remove traces of soil waste material, smudges, and other foreign matter. Remove traces of splashed materials from adjacent surfaces. Remove paint drippings, spots, stains, and dirt from finished surfaces. Use only the cleaning materials and equipment instructed by the manufacturer of the surface material.

J. Glass: Clean glass inside and outside.

K. Polished surfaces: On surfaces requiring the routine application of buffed polish, apply the polish recommended by the manufacturer of the material being polished. Glossy surfaces shall be cleaned and shined as intended by the manufacturer
5. Wipe surfaces of mechanical and electrical equipment. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.
6. Clean the site, including landscape development areas, of rubbish, litter, and other foreign substances. Sweep paved areas broom clean; remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted to a smooth, even-textured surface.

L. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid the Project of rodents, insects, and other pests.

M. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.

N. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess

materials on the District's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of lawfully.

O. Extra Materials: Where extra materials of value remain after completion of associated Work, they become the District's property. Dispose of these materials as directed by the Owner.

P. Timing: Schedule final cleaning as accepted by the Architect to enable the District to accept a completely clean project.

Q. Cleaning During District's Occupancy
   7. Should the District occupy the work or any portion thereof prior to its completion by the Contractor and acceptance by the District, responsibilities for interim and final cleaning of the occupied spaces shall be determined by the Architect in accordance with the General Conditions of the Contract.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
   1. Inspection procedures.
   2. Final Completion.
   3. Warranties.
   4. Final cleaning.
   5. Repair of work.

B. 01 79 00 "Demonstration and Training" for requirements for instructing Owner's personnel.

C. See Divisions 02 through 48 Sections for specific closeout and special cleaning requirements for the Work in those Sections.

1.2 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
   1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
   2. Advise Owner of pending insurance changeover requirements.
   3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
   4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
   6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
   7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
   8. Complete startup testing of systems.
   9. Submit test/adjust/balance records.
   10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
   11. Advise Owner of changeover in heat and other utilities.
   12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
   13. Complete final cleaning requirements, including touchup painting.
   14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
   15. Successful completion of Functional Testing for equipment requiring LDD Commissioning.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
   1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
   2. Results of completed inspection will form the basis of requirements for Final

Completion.

1.3 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
   1. Submit a final Application for Payment according to "Payment Procedures."
   2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
   3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
   4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
   1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.4 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit electronic versions of list (including editable file and PDF file). Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
   1. Organize list of spaces in sequential order, starting with exterior areas first.
   2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
   3. Submit list of incomplete items in the following format:
      a. MS Excel electronic file. Architect, though Construction Manager, will retune annotate copy.

1.5 WARRANTIES

A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
   1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8- 1/2-by-11-inch paper.
   2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
   3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.

C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
    a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
    b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
    c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
    d. Remove tools, construction equipment, machinery, and surplus material from Project site.
    e. Remove snow and ice to provide safe access to building.
    f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
    g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    h. Sweep concrete floors broom clean in unoccupied spaces.
    i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
    j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision- obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
    k. Remove labels that are not permanent.
    l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
        1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
    m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

n. Replace parts subject to unusual operating conditions.
o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
q. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
r. Leave Project clean and ready for occupancy.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION

PART 1 – GENERAL

1.1 SUMMARY

A. Commissioning is intended to achieve the following specific objectives; this section specifies the Contractor's responsibilities for commissioning:
   1. Verify that the work is installed in accordance with Contract Documents and the manufacturer's recommendations and instructions, and that it receives adequate operational checkout prior to startup: Startup reports and Prefunctional Checklists executed by Contractor are utilized to achieve this.
   2. Verify and document that functional performance is in accordance with Contract Documents: Functional Tests executed by Contractor and witnessed by the Commissioning Authority are utilized to achieve this.
   3. Verify that operation and maintenance manuals submitted to Airport are complete: Detailed operation and maintenance (O&M) data submittals by Contractor are utilized to achieve this.
   4. Verify that the Airport's operating personnel are adequately trained: Formal training conducted by Contractor is utilized to achieve this.

B. The Commissioning Authority directs and coordinates all commissioning activities; this section describes some but not all of the Commissioning Authority's responsibilities.

1.2 RELATED REQUIREMENTS

A. Section 01 77 00 - Closeout Submittals: Scope and procedures for operation and maintenance manuals and project record documents.

PART 2 – PRODUCTS

2.1 TEST EQUIPMENT

A. Provide all standard testing equipment required to perform startup and initial checkout and required Functional Testing; unless otherwise noted such testing equipment will NOT become the property of Airport.

B. Calibration Tolerances: Provide testing equipment of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified. If not otherwise noted, the following minimum requirements apply:
   1. Temperature Sensors and Digital Thermometers: Certified calibration within past year to accuracy of 0.5 degree F and resolution of plus/minus 0.1 degree F.
   2. Pressure Sensors: Accuracy of plus/minus 2.0 percent of the value range being measured (not full range of meter), calibrated within the last year.

3. Calibration: According to the manufacturer's recommended intervals and when dropped or damaged; affix calibration tags or keep certificates readily available for inspection.

C. Equipment-Specific Tools: Where special testing equipment, tools and instruments are specific to a piece of equipment, are only available from the vendor, and are required in order to accomplish startup or Functional Testing, provide such equipment, tools, and instruments as part of the work at no extra cost to Airport; such equipment, tools, and instruments are to become the property of Airport.

D. Dataloggers: Independent equipment and software for monitoring flows, currents, status, pressures, etc. of equipment.
1. Dataloggers required to for Functional Tests will be provided by the Commissioning Authority and will not become the property of Airport.

PART 3 – EXECUTION

3.1 COMMISSIONING PLAN

A. Commissioning Authority has prepared the Commissioning Plan.
1. Attend meetings called by the Commissioning Authority for purposes of completing the commissioning plan.
2. Require attendance and participation of relevant subcontractors, installers, suppliers, and manufacturer representatives.

B. Contractor is responsible for compliance with the Commissioning Plan.

C. Commissioning Plan: The commissioning schedule, procedures, and coordination requirements for all parties in the commissioning process.

D. Commissioning Schedule:
1. Submit anticipated dates of startup of each item of equipment and system to Commissioning Authority within 60 days after award of Contract.
2. Re-submit anticipated startup dates monthly, but not less than 4 weeks prior to startup.
3. Prefunctional Checklists and Functional Tests are to be performed in sequence from components, to subsystems, to systems.
4. Provide sufficient notice to Commissioning Authority for delivery of relevant Checklists and Functional Test procedures, to avoid delay.

3.2 STARTUP PLANS AND REPORTS

A. Startup Plans: For each item of equipment and system for which the manufacturer provides a startup plan, submit the plan not less than 8 weeks prior to startup.

B. Startup Reports: For each item of equipment and system for which the manufacturer provides a startup checklist (or startup plan or field checkout sheet), document compliance by submitting the completed startup checklist prior to startup, signed and dated by responsible entity.

C. Submit directly to the Commissioning Authority.

3.3 PREFUNCTIONAL CHECKLISTS

A. A Prefunctional Checklist is required to be filled out for each item of equipment or other assembly specified to be commissioned.
   1. No sampling of identical or near-identical items is allowed.
   2. These checklists do not replace manufacturers' recommended startup checklists, regardless of apparent redundancy.
   3. Prefunctional Checklist forms will not be complete until after award of the contract; the following types of information will be gathered via the completed Checklist forms:
      a. Certification by installing contractor that the unit is properly installed, started up, and operating and ready for Functional Testing.
      b. Confirmation of receipt of each shop drawing and commissioning submittal specified, itemized by unit.
      c. Manufacturer, model number, and relevant capacity information; list information "as specified," "as submitted," and "as installed."
      d. Serial number of installed unit.
      e. List of inspections to be conducted to document proper installation prior to startup and Functional Testing; these will be primarily static inspections and procedures; for equipment and systems may include normal manufacturer’s start-up checklist items and minor testing.
      f. Sensor and actuator calibration information.

B. Contractor is responsible for filling out Prefunctional Checklists, after completion of installation and before startup; witnessing by the Commissioning Authority is not required unless otherwise specified.
   1. Each line item without deficiency is to be witnessed, initialed, and dated by the actual witness; checklists are not complete until all line items are initialed and dated complete without deficiencies.
   2. Checklists with incomplete items may be submitted for approval provided the Contractor attests that incomplete items do not preclude the performance of safe and reliable Functional Testing; re-submission of the Checklist is required upon completion of remaining items.
   3. Individual Checklists may contain line items that are the responsibility of more than one installer; Contractor shall assign responsibility to appropriate installers or subcontractors, with identification recorded on the form.
   4. If any Checklist line item is not relevant, record reasons on the form.
   5. Contractor may independently perform startup inspections and/or tests, at Contractor's option.

6. Regardless of these reporting requirements, Contractor is responsible for correct startup and operation.
7. Submit completed Checklists to Commissioning Authority within two days of completion.

C. Commissioning Authority is responsible for furnishing the Prefunctional Checklists to Contractor.
1. Initial Drafts: Contractor is responsible for initial draft of Prefunctional Checklist where so indicated in Contract Documents.
2. Provide all additional information requested by Commissioning Authority to aid in preparation of checklists, such as shop drawing submittals, manufacturers' startup checklists, and O&M data.
3. Commissioning Authority may add any relevant items deemed necessary regardless of whether they are explicitly mentioned in Contract Documents or not.
4. When asked to review the proposed Checklists, do so in a timely manner.

D. Commissioning Authority Witnessing: Required for:
1. Each piece of primary equipment, unless sampling of multiple similar units is allowed by the commissioning plan.
2. A sampling of non-primary equipment, as allowed by the commissioning plan.

E. Deficiencies: Correct deficiencies and re-inspect or re-test, as applicable, at no extra cost to Airport.
1. If difficulty in correction would delay progress, report deficiency to the Commissioning Authority immediately.

3.4 FUNCTIONAL TESTS

A. A Functional Test is required for each item of equipment, system, or other assembly specified to be commissioned, unless sampling of multiple identical or near-identical units is allowed by the final test procedures.

B. Contractor is responsible for execution of required Functional Tests, after completion of Prefunctional Checklist and before closeout.

C. Commissioning Authority is responsible for witnessing and reporting results of Functional Tests, including preparation and completion of forms for that purpose.

D. Contractor is responsible for correction of deficiencies and re-testing at no extra cost to Airport; if a deficiency is not corrected and re-tested immediately, the Commissioning Authority will document the deficiency and the Contractor's stated intentions regarding correction.
1. Deficiencies are any condition in the installation or function of a component, piece of equipment or system that is not in compliance with Contract Documents or does not perform properly.
2. When the deficiency has been corrected, the Contractor completes the form certifying that the item is ready to be re-tested and returns the form to the

Commissioning Authority; the Commissioning Authority will reschedule the test and the Contractor shall re-test.

3. Identical or Near-Identical Items: If 10 percent, or three, whichever is greater, of identical or near-identical items fail to perform due to material or manufacturing defect, all items will be considered defective; provide a proposal for correction within 2 weeks after notification of defect, including provision for testing sample installations prior to replacement of all items.
4. Contractor shall bear the cost of Airport and Commissioning Authority personnel time witnessing re-testing.
5. Contractor shall bear the cost of Airport and Commissioning Authority personnel time witnessing re-testing if the test failed due to failure to execute the relevant Prefunctional Checklist correctly; if the test failed for reasons that would not have been identified in the Prefunctional Checklist process, Contractor shall bear the cost of the second and subsequent re-tests.

E. Functional Test Procedures:
1. Some test procedures are included in Contract Documents; where Functional Test procedures are not included in Contract Documents, test procedures will be determined by the Commissioning Authority with input by and coordination with Contractor.
2. Examples of Functional Testing:
a. Test the dynamic function and operation of equipment and systems (rather than just components) using manual (direct observation) or monitoring methods under full operation (e.g., the chiller pump is tested interactively with the chiller functions to see if the pump ramps up and down to maintain the differential pressure setpoint).
b. Systems are tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, fire alarm, power failure, etc.
c. Systems are run through all the HVAC control system’s sequences of operation and components are verified to be responding as the sequence's state.
d. Traditional air or water test and balancing (TAB) is not Functional Testing; spot checking of TAB by demonstration to the Commissioning Authority is Functional Testing.

F. Deferred Functional Tests: Some tests may need to be performed later, after substantial completion, due to partial occupancy, equipment, seasonal requirements, design or other site conditions; performance of these tests remains the Contractor's responsibility regardless of timing.

3.5 SENSOR AND ACTUATOR CALIBRATION

A. Calibrate all field-installed temperature, relative humidity, carbon monoxide, carbon dioxide, and pressure sensors and gauges, and all actuators (dampers and valves) on this

piece of equipment shall be calibrated. Sensors installed in the unit at the factory with calibration certification provided need not be field calibrated.

B. Calibrate using the methods described below; alternate methods may be used, if approved by Commissioning Authority and Owner beforehand. See PART 2 for test instrument requirements. Record methods used on the relevant Prefunctional Checklist or other suitable forms, documenting initial, intermediate and final results.

C. All Sensors:
   1. Verify that sensor location is appropriate and away from potential causes of erratic operation.
   2. Verify that sensors with shielded cable are grounded only at one end.
   3. For sensor pairs that are used to determine a temperature or pressure difference, for temperature make sure they are reading within 0.2 degree F of each other, and for pressure, within tolerance equal to 2 percent of the reading, of each other.
   4. Tolerances for critical applications may be tighter.

D. Sensors Without Transmitters - Standard Application:
   1. Make a reading with a calibrated test instrument within 6 inches of the site sensor.
   2. Verify that the sensor reading, via the permanent thermostat, gauge or building automation system, is within the tolerances in the table below of the instrument-measured value.
   3. If not, install offset, calibrate or replace sensor.

E. Sensors With Transmitters - Standard Application.
   1. Disconnect sensor.
   2. Connect a signal generator in place of sensor.
   3. Connect ammeter in series between transmitter and building automation system control panel.
   4. Using manufacturer’s resistance-temperature data, simulate minimum desired temperature.
   5. Adjust transmitter potentiometer zero until 4 mA is read by the ammeter.
   6. Repeat for the maximum temperature matching 20 mA to the potentiometer span or maximum and verify at the building automation system.
   7. Record all values and recalibrate controller as necessary to comply with specified control ramps, reset schedules, proportional relationship, reset relationship and P/I reaction.
   8. Reconnect sensor.
   9. Make a reading with a calibrated test instrument within 6 inches of the site sensor.
   10. Verify that the sensor reading, via the permanent thermostat, gauge or building automation system, is within the tolerances in the table below of the instrument-measured value.
   11. If not, replace sensor and repeat.
   12. For pressure sensors, perform a similar process with a suitable signal generator.

F. Sensor Tolerances for Standard Applications: Plus/minus the following maximums:

1. Watthour, Voltage, Amperage: 1 percent of design.
2. Pressure, Air, Water, Gas: 3 percent of design.
3. Air Temperatures (Outside Air, Space Air, Duct Air): 0.4 degrees F.
4. Relative Humidity: 4 percent of design.
5. Barometric Pressure: 0.1 inch of Hg.
6. Flow Rate, Air: 10 percent of design.
7. Flow Rate, Water: 4 percent of design.
8. AHU Wet Bulb and Dew Point: 2.0 degrees F.

G. Critical Applications: For some applications more rigorous calibration techniques may be required for selected sensors. Describe any such methods used on an attached sheet.

H. Valve/Damper Stroke Setup and Check:
1. For all valve/damper actuator positions checked, verify the actual position against the control system readout.
2. Set pump/fan to normal operating mode.
3. Command valve/damper closed; visually verify that valve/damper is closed and adjust output zero signal as required.
4. Command valve/damper to open; verify position is full open and adjust output signal as required.
5. Command valve/damper to a few intermediate positions.
6. If actual valve/damper position does not reasonably correspond, replace actuator or add pilot positioner (for pneumatics).

I. Isolation Valve or System Valve Leak Check: For valves not associated with coils.
1. With full pressure in the system, command valve closed.
2. Use an ultra-sonic flow meter to detect flow or leakage.

3.6 TEST PROCEDURES – GENERAL

A. Provide skilled technicians to execute starting of equipment and to execute the Functional Tests. Ensure that they are available and present during the agreed upon schedules and for sufficient duration to complete the necessary tests, adjustments and problem-solving.

B. Provide all necessary materials and system modifications required to produce the flows, pressures, temperatures, and conditions necessary to execute the test according to the specified conditions. At completion of the test, return all affected equipment and systems to their pre-test condition.

C. Sampling: Where Functional Testing of fewer than the total number of multiple identical or near-identical items is explicitly permitted, perform sampling as follows:
1. Identical Units: Defined as units with same application and sequence of operation; only minor size or capacity difference.
2. Sampling is not allowed for:
a. Major equipment.

b. Life-safety-critical equipment.
c. Prefunctional Checklist execution.

3. XX = the percent of the group of identical equipment to be included in each sample; defined for specific type of equipment.
4. YY = the percent of the sample that if failed will require another sample to be tested; defined for specific type of equipment.
5. Randomly test at least XX percent of each group of identical equipment, but not less than three units. This constitutes the "first sample."
6. If YY percent of the units in the first sample fail, test another XX percent of the remaining identical units.
7. If YY percent of the units in the second sample fail, test all remaining identical units.
8. If frequent failures occur, resulting in more troubleshooting than testing, the Commissioning Authority may stop the testing and require Contractor to perform and document a checkout of the remaining units prior to continuing testing.

D. Manual Testing: Use hand-held instruments, immediate control system readouts, or direct observation to verify performance (contrasted to analyzing monitored data taken over time to make the “observation”).

E. Simulating Conditions: Artificially create the necessary condition for the purpose of testing the response of a system; for example apply hot air to a space sensor using a hair dryer to see the response in a VAV box.

F. Simulating Signals: Disconnect the sensor and use a signal generator to send an amperage, resistance or pressure to the transducer and control system to simulate the sensor value.

G. Over-Writing Values: Change the sensor value known to the control system in the control system to see the response of the system; for example, change the outside air temperature value from 50 degrees F to 75 degrees F to verify economizer operation.

H. Indirect Indicators: Remote indicators of a response or condition, such as a reading from a control system screen reporting a damper to be 100 percent closed, are considered indirect indicators.

I. Monitoring: Record parameters (flow, current, status, pressure, etc.) of equipment operation using dataloggers or the trending capabilities of the relevant control systems; where monitoring of specific points is called for in Functional Test Procedures:
1. All points that are monitored by the relevant control system shall be trended by Contractor; at the Commissioning Authority’s request, Contractor shall trend up to 20 percent more points than specified at no extra charge.
2. Other points will be monitored by the Commissioning Authority using dataloggers.
3. At the option of the Commissioning Authority, some control system monitoring may be replaced with datalogger monitoring.

4. Provide hard copies of monitored data in columnar format with time down left column and at least 5 columns of point values on same page.
5. Graphical output is desirable and is required for all output if the system can produce it.
6. Monitoring may be used to augment manual testing.

3.7 OPERATION AND MAINTENANCE MANUALS

A. Add design intent documentation furnished by Architect to manuals prior to submission.

B. Submit manuals related to items that were commissioned to Commissioning Authority for review; make changes recommended by Commissioning Authority.

C. Commissioning Authority will add commissioning records to manuals after submission.

- END OF SECTION

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PART 1 GENERAL

A.01 DESCRIPTION

A. This section specifies demolition and removal of buildings, portions of buildings, utilities, pavements, base courses, signage, pavement markings, other structures and debris from trash dumps shown.

B. Includes removal of interior wood and suspended ceiling systems, lighting, raceways, conductors, and attachments to ceiling areas removed.

C. Includes removal of interior floors, foundation coring, exterior pavements, trenching, barricades, patching, coordination, permitting and other work related to installation on new sanitary sewer underground piping and new lateral.

D. Demolition materials shall be removed from site and costs for transportation and removal included in Bid. Including all pavements and base course materials.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 PROTECTION

A. Perform demolition in such a manner as to eliminate hazards to persons and property; to minimize interference with use of adjacent areas, utilities and structures or interruption of use of such utilities; and to provide free passage to and from such adjacent areas of structures.

B. Provide safeguards, including warning signs, barricades, temporary fences, warning lights, and other similar items that are required for protection of all personnel and aircraft during demolition and removal operations.

C. Maintain fences, barricades, lights, and other similar items around exposed excavations until such excavations have been completely filled.

D. Prevent spread of flying particles and dust. Sprinkle rubbish and debris with water to keep dust to a minimum. Do not use water if it results in hazardous or objectionable condition such as, but not limited to; ice, flooding, or pollution. Vacuum and dust the work area daily. Follow City requirements.

E. In addition to previously listed fire and safety rules to be observed in performance of work, include following:

1. No wall or part of wall shall be permitted to fall outwardly from structures.

2. Wherever a cutting torch or other equipment that might cause a fire is used, provide and maintain fire extinguishers nearby ready for immediate use. Instruct all possible users in use of fire extinguishers.

3. Keep hydrants clear and accessible at all times. Prohibit debris from accumulating within a radius of 15 feet of fire hydrants.

F. Before beginning any demolition work, the Contractor shall survey the site and examine the drawings and specifications to determine the extent of the work. The contractor shall take necessary precautions to avoid damages to existing items to remain in place, to be reused, or to remain the property of the site; any damaged items shall be repaired or replaced. The Contractor shall coordinate the work of this section with all other work and shall construct and maintain shoring, bracing, and supports as required. The Contractor shall ensure that structural elements are not overloaded and shall be responsible for increasing structural supports or adding new supports as may be required as a result of any cutting, removal, or demolition work performed under this contract. Do not overload structural elements. Provide new supports and reinforcement for existing construction weakened by demolition or removal works.

1.04 UTILITY SERVICES

A. Demolish and remove outside utility service lines (water, sewer, storm water, gas, electrical and communications) shown to be removed and as required to install new utility lines and building.

B. Remove abandoned outside utility lines that would interfere with installation of new utility lines and new construction.

C. Coordinate removal of utilities with utility companies.

D. Coordinate relocation of mainline sewer and water lines.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 DEMOLITION

A. Completely demolish and remove buildings and structures, including all appurtenances related or connected thereto. Completely demolish pavements, curbs, walks, pads, irrigation systems, utility boxes, gutters, exterior signage, landscaping, landscape features, fencing and all other site features required to install new building and site elements.

1. As required for installation of new utility service lines.

2. To full depth within an area defined by hypothetical lines located 20 feet outside building lines of new structures.

3. As required to install new site/civil components.

B. Debris, including brick, concrete, stone, metals and similar materials shall become the property of Contractor and shall be disposed daily, off the property to avoid accumulation at the demolition site. Materials that cannot be removed daily shall be stored in areas specified by the Owner. Contractor shall dispose of debris in compliance with applicable federal, state or local permits, rules and/or regulations.

C. Remove and legally dispose of all materials, other than earth to remain as part of project work. Materials removed shall become the property of the contractor and shall be disposed of in compliance with applicable federal, state or local permits, rules and/or regulations. Materials that are located beneath the surface of the surrounding ground.

D. Remove existing utilities as indicated or uncovered by work and terminate in a manner conforming to the nationally recognized code covering the specific utility and approved by the Owner. When utility lines are encountered that are not indicated on the drawings, the Owner shall be notified prior to further work in that area.

3.02 CLEAN-UP

A. On completion of work of this section and after removal of all debris, leave site in clean condition satisfactory to Owner. Clean-up shall include off-site disposal of all items and materials not required to remain property of the Owner as well as all debris and rubbish resulting from demolition operations.

END OF SECTION

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PART 1 GENERAL

1.01 SUMMARY

A. This Section includes the requirements for tests and inspections for site concrete work specified in Sections 03 20 00 Concrete Reinforcement and 03 30 00 Cast in Place Concrete.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 SUBMITTALS

A. Submit for review and approval.

1. Design Data: Certified copies of mix designers for each concrete class specified

2. Certifications that materials comply with requirements specified.

3. Samples: As requested by the Testing Laboratory and accompanied by certification from vendor that samples originate from and are representative of each lot proposed for use.

4. Test Reports

a. Mill test reports for reinforcement.

b. Reports from testing organization.

1.04 QUALITY ASSURANCE

A. Referenced Standards

1. California Building Code (CBC), 2019.

2. ACI 301 – Specifications for Structural Concrete for Buildings.

3. ACI 318 – Building Code Requirements for Structural Concrete.

4. ASTM C143 / C143M-15a – Standard Test Method for Slump of Hydraulic-Cement Concrete

1.05 DELIVERY, STORAGE AND HANDLING

A. Owner is responsible for all testing and inspection of concrete work. The owner shall retain the services of a certified testing laboratory to perform concrete testing.

PART 2 PRODUCTS

2.01 REINFORCEMNT

A. The Testing Laboratory

1. Take samples from bundles delivered to job site from the mill, unless bundles are identified by heat number and accompanied by mill certificates. When reinforced is not positively identified by heat numbers or when random sampling is intended two specimens will be taken from each 2 ½ tons or fraction thereof of each size and grade.

2. Test for tensile and bending strength in accordance with CBC Chapters 17 and 19.

2.02 CAST IN PLACE CONCRETE

A. The Testing Laboratory will:

1. Review mix designs, compliance certificates and samples of materials proposed for use.

2. Test and inspect materials according to CBC 1903 from compliance with requirements specified in Section 03 30 00 Cast-in-Place Concrete.

3. Inspect batch plant prior to concrete being furnished to verify that:

a. Plant is equipped with approved metering devices for determining moisture content of fine aggregate.

b. Other plant quality controls are satisfactory.

PART 3 EXECUTION

3.01 CAST-IN-PLACE CONCRETE

A. The Testing Laboratory will:

1. Perform testing in accordance with ACI 318

2. Test concrete slump in accordance with ASTM C143

3. Test concrete for required compressive strength in conformance with CBC Section 1905, as follows.

a. Make and cure a minimum of five specimen cylinders according to ASTM C31 for each 150 cubic yards, or fraction thereof, of each class of concrete placed each day.

b. As a minimum, one set of five specimen cylinders shall be made for each 5,000 square feet of slab or wall surface area or fraction thereof placed each day

c. Retain one cylinder for 7-day test, one for 14-day test, and two for 28-day test. Hold one or more cylinders for subsequent testing, in necessary.

d. Number each cylinder, date each set of cylinders and record placement represented by each set of cylinders.

e. Transport specimen cylinders from jobsite to laboratory.

f. Test specimen cylinders according to ASTM C30 from specified strength after cylinders have aged for 7 days, 14 days, and 28 days.

B. Furnish to the Testing Laboratory the ready-mix delivery tickets for each batch of concrete delivered to the jobsite, each ticket bearing the following:

1. Design mix number

2. Time of batching

3. Weight of cement, type and maximum size of aggregates, water, and admixtures in each batch.

4. Total volume of concrete in each batch.

C. When laboratory tests of specimen cylinders show compressive strengths below the minimum specified, the Contractor will be back charged for costs of the taking and testing core specimens of hardened concrete according to ASTM C42.

END OF SECTION

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PART 1 GENERAL

1.01 SUMMARY

A. This section includes the requirements for furnishing and placing concrete formwork.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 QUALITY ASSURANCE

A. Referenced Standards

1. California Building Code (CBC), 2019

2. ACI 301 – Specifications for Structural Concrete for Buildings.

3. ACI 318 – Building Code Requirements for Reinforced Concrete

4. ACI 347R – Guide to Formwork for Concrete.

5. CRSI Manual of Standard Practice

6. PSI-95 US Product Standard for Construction and Industrial Plywood

7. West Coast Lumber Inspection Bureau (WCLB) Standard.

8. Western Wood Products Association (WWPA) Publication: Western Lumber Grading Rules.

B. Design Criteria: Unless otherwise shown, noted, or specified, formwork shall be in conformance with ACI 347

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle materials subject to damage from dirt and moisture maintaining them clean and dry, off the ground, and suitably protected.

PART 2 PRODUCTS

2.01 MATERIALS

A. General: Form materials shall be new at start of work.

B. Form Lumber: Douglas Fir, Construction Grade, S1S2E

C. Plywood Forms and Architectural Smooth Finish: Five-ply, 3/4-inch thick, APA A-A Plyform, Class I, Exterior Type, with mill-oiling treatment omitted for architecture smooth finish; or Owner approved equal.

D. Flexible spring steel forms or laminated boards for forming radius bends.

E. Form Accessories:

1. Accessories which will be entirely or partially embedded in concrete, such as ties and hangers, shall be of metal and of standard manufacture; wire ties are not acceptable.

2. The portion of embedded accessories remaining in concrete shall have no metal within one inch of face of concrete, and shall have no fractures, spalls, depressions, or other surface disfigurations exceeding 3/4 inch in diameter.

3. Spreader cones on ties shall not exceed one inch in diameter.

F. Form Sealer: Sealer shall eliminate grain raise as a result of moisture, and shall not interfere with color, bond, or subsequent treatment of or application of finishes to concrete surface; Sonneborn Building Products, Inc. "Form Saver," Grace Construction Materials "Form Film," Burke "Form Sealer," or approved equal.

G. Form Release Agents:

1. For Concrete Exposed to View in the Finished Work or to Receive Applied Finishes: Use chemically-active types producing water-insoluble soaps. Release agents shall contain no petroleum-based solvents such as creosote, paraffin, wax, or diesel oil.

2. For ABS form liners, use only form release agents recommended by form liner manufacturer.

3. For Unexposed Concrete: Any type that will not interfere with bond of finishes to be applied.

PART 3 EXECUTION

3.01 PREPARATION

A. Treat contact surface of plywood and board forms with a form sealer in accordance with the manufacturer's printed instructions.

B. Clean form surfaces and reseal before each use. The use of form oil will not be permitted.

3.02 CONSTRUCTION

A. Design, construct, and brace formwork and temporary falsework to safely support concrete and hold personnel during construction operations.

B. Coordinate design, construction, and installation of formwork to accommodate openings, sleeves, chases, pipes, nailers, anchors, ties, inserts, and other embedded items.

C. Construct forms of sufficient strength and rigidity to produce finished concrete of the size, shape, and location shown, without exceeding specified tolerances. Form assembly shall permit removal in proper sequence without damaging concrete.

D. Use only new plywood form material for creating smooth architectural finish where required; reuse of forms not permitted for creating smooth architectural finish.

E. Install form liners for architectural finishes in strict accordance with manufacturer's printed instructions and approved submittal.

F. Arrange forms to permit single pours of exposed areas and panels without joints between adjacent form materials in the same plane.

G. Construct forms for all exposed to view concrete full height and width between construction joints in surface of concrete. Do not break forms for pour or construction joints within such areas.

H. Forms shall not extend higher than 12 inches above the top of a pour or construction joint.

I. Form construction joints as specified in Section 03 30 00 – Cast-In-Place Concrete. Provide a surfaced pouring strip where construction joints intersect faces of surfaces to be exposed to view in the finished work; prior to subsequent pour, remove strip and tighten forms.

J. Construction joints shall show no overlapping or offsetting of concrete surfaces and shall as closely as possible have the same appearance as butted board joints. Joints in a continuous line shall be straight and true.

K. Provide cleanouts as required to permit inspection and thorough cleaning of loose dirt and debris. Cleanouts shall not be apparent on concrete surfaces exposed to view in finished work.

L. Arrange forms to permit proper erection sequence and subsequent form removal without damaging concrete.

M. Whenever concrete bases and foundations are required for equipment furnished as part of the work of other Sections, verify equipment dimensions prior to placing concrete.

N. Forms for concrete surfaces exposed to view in the finished work shall be constructed to match existing concrete finish.

O. Forms for unexposed concrete surfaces shall be undressed lumber, form plywood, or other suitable material.

P. Formwork shall be clean and free of foreign material when concrete is placed.

3.03 FORM REMOVAL

A. Do not remove forms until concrete has attained sufficient strength to support its own weight and anticipated construction live loads without damage, but in no case less than the following.

1. Walls: Four (4) days

2. Footings, Curbs, Walks, Paving: Side forms may be removed 24 hours after concrete placement.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. This section includes the requirements for furnishing and installing concrete reinforcement.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 SUBMITTALS

A. Shop Drawings: Complete bending and placing details of reinforcement.

1. Details of reinforcement not shown on Drawings shall be in conformance with ACI 315 and ACI 318.

2. Detailing, fabricating and spacing of reinforcement shall be in conformance with ACI 315 unless otherwise shown or noted.

B. Test Reports: Certified copies of mill tests showing chemical and physical analyses of each heat or melt from which reinforcement was made.

1.04 QUALITY ASSURANCE

A. Referenced Standards

1. California Building Code (CBC), 2019.

2. ACI 301 – Specifications for Structural Concrete for Buildings

3. ACI 318 – Building Code Requirements for Reinforced Concrete

4. ACI 347R – Guide to Formwork for Concrete

5. CRSI Manual of Standard Practice

B. Allowable Tolerances Fabricating/placing tolerances shall be in conformance with ACI 301.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver reinforcement from the mill in securely tied bundles, each bundle limited to one size and grade of reinforcement. Identify each bundle with readily visible metal or plastic tags identifying the reinforcement by the same item marking as on the approved shop

drawings; tags shall also identify the mill, heat or melt number, and the grade and size of reinforcement.

B. After bundles are broken, identify by segregating reinforcement by sizes and grades.

C. Store reinforcement off the ground, protected from the elements and foreign material which could adversely affect its bond with concrete.

PART 2 PRODUCTS

2.01 MATERIALS

A. Reinforcing Bars: ASTM A625, Grade 60 for all bars except where noted otherwise on plans.

B. Wire for Ties, Stirrups, and Spiral Reinforcement: ASTM A82.

C. Spacers, Bar Supports, and Other Accessories: In conformance with ACI 315. Where portions of accessories will be within 1/2 inch of concrete surfaces which will be exposed to the elements in the finished work, such accessories shall be of non-corrosive material or shall be corrosion-resistant treated; aluminum products will not be acceptable.

2.02 FABRICATION

A. Fabricate reinforcement in accordance with the requirements of ACI 315, where specific details are not shown or where Contract Documents are not more restrictive.

B. Fabrication of reinforcement shall begin only after approval of bar lists and shop drawings, with each item of reinforcement fabricated in conformance with such approved documents.

C. Bend reinforcing steel cold; do not straighten/rebend, doing damage to the material.

PART 3 EXECUTION

3.01 INSTALLATION

A. At time of concrete placement, reinforcement shall be free of dirt, oil, scale, loose rust, and other foreign material that could adversely affect the bond with concrete.

B. Fasten reinforcement/support to prevent displacement beyond the tolerances specified in ACI 301, by construction loads and concrete placement. Sizes and dimensions of supports shall be as required to position the reinforcement as shown on the approved shop drawings and in conformance with the minimum concrete protective covering requirements of ACI 301.

C. Furnish reinforcing bars full length whenever possible; splices will be permitted only where shown or noted on the approved shop drawings, or as otherwise permitted by the Owner.

D. Splices may be made in horizontal reinforcement by lapping and placing ends of bars in contact and securely wiring; or bars may be separated sufficiently to permit the embedment of the entire surface of each bar in concrete.

1. Locate all splices as per drawings. Lap bars 48 diameters minimum.

2. Stagger splices in adjacent bars.

E. Obstructions: Should items to be embedded in concrete interfere with placement of reinforcements, notify the Owner to obtain written approval of procedure before starting.

F. Concrete Cover: Install reinforcement to achieve the minimum concrete coverage shown or noted on the Drawings, unless otherwise specified.

G. Welding: Reinforcing bars shall not have welded joints.

H. Misplaced Reinforcing Bars:

1. If reinforcing bars are found to be misplaced after concrete placement, immediately notify the Owner for recommendations for correcting the misplacement; perform no corrective measures without such prior recommendations.

2. Redesign, alterations, corrections, and replacement of concrete or reinforcing bars due to misplaced bars shall be performed at no additional expense to the Owner.

3.02 MAINTENANCE OF REINFORCEMENT

A. Continuously inspect/maintain reinforcement in proper position during concreting operations.

B. Where reinforcement cannot otherwise be kept properly aligned, provide additional bracing ties, stirrups, and other items as necessary.

END OF SECTION

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PART 1 GENERAL

1.01 SUMMARY

A. This Section includes the requirements for furnishing and placing cast-in-place concrete, including cast-in-place architectural finish concrete, curing and finishing.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

SUBMITTALS

B. Mix design for each class of concrete proposed for use. If concrete will be pneumatically placed, mixes shall be specifically designed and designated.

C. Laboratory test reports for concrete mixes. Compression test data (field experience method) or results of testing (trial batch method) used to establish mix proportions.

D. Product Data: Manufacturers' and suppliers' proprietary information on materials.

E. Layout Drawings: Submit layout drawings showing proposed locations of construction joints, control joints, details of construction, and connections for approval prior to concrete placement.

F. Submit delivery ticket to Owner for each batch of concrete delivered.

1.03 QUALITY ASSURANCE

A. Reference Standards

1. California Building Code (CBC), 2016.

2. ACI 301 – Specifications for structural Concrete for Buildings.

3. ACI 318 – Building Code Requirements for Reinforced Concrete.

B. Quality Control: Contractor to retain the services of a qualified testing organization as specified in Testing Laboratory Services.

C. Quality Control Supervisor: Owner will retain the services of an independent concrete contractor that will observe Contractor’s work to achieve desired results.

D. Allowable Tolerances: Deviation from plumb and level shall not exceed 1/8 inch within ten feet in any direction, as determined with a ten-foot straightedge. Cumulative deviation over the length or height of the building shall not exceed 3/8 inch in any direction.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, and handle packaged materials in the manufacturers' original, sealed packages, each clearly identified with the manufacturer's name, and name and type of material.

B. Deliver, store, and handle materials subject to damage from dirt and moisture maintaining them clean and dry, off the ground, and suitably protected.

C. Store coarse and fine aggregates in separate, covered bins to prevent them from mixing, and to preserve moisture content of aggregate at batch plant.

D. Store bulk cement in covered bins.

1.05 PROJECT CONDITIONS

A. Environmental Requirements for Concrete Placement:

1. Hot Weather: In conformance with ACI 305.

2. Cold Weather: In conformance with ACI 306.

3. During Precipitation: Do not place unless adequate protection is provided.

PART 2 PRODUCTS

2.01 MATERIALS

A. Concrete, ready-mixed, ASTM C94.

1. Cement: ASTM C150, Type II, Portland Cement.

2. Aggregate:

a. Fine Aggregate: ASTM C33

b. Coarse Aggregate: ASTM C33

c. Source of aggregate shall remain constant for the duration of the work.

3. Water: Clean, clear, and potable.

B. Curing materials:

1. Liquid Membrane: ASTM C308, Type I.

2. Sheet material: ASTM C171.

C. Admixtures

1. Water reducing Admixture: ASTM C494, only with prior review of mix design.

2. Air-Entraining Admixture: ASTM C260, for lightweight concrete only with prior review of mix design.

3. Unspecified Admixtures: Not Permitted.

4. Calcium Chloride: not Permitted.

5. Hydrogen Chloride: Not Permitted

D. Non-shrink Grout: Premixed, requiring only addition of specified water; Master Builders "Masterflow 928," or approved equal.

1. Flowable, low shrinkage, 5,000 psi at 7 days.

2. Non-metallic Type: For all uses.

3. Metalic Type: Will not be permitted.

E. Bonding Agent: Larsen Products Corp. "Weld-Crete," Sika Chemical Corp. "Sikastix 370" or "Sikadur Hi-Mod," or approved equal.

F. Hardener: Clear, dust-on type; Sonneborn-Contech "Harcol Standard Natural," Upco Co. "Hydroment," Lambert Corp. "Colorhard," or approved equal.

G. Sealer: Heavy penetrating type, from same manufacturer as hardener.

1. Without wax or other constituent that will impair application of finishes.

H. Epoxy Grout for Reinforcement and Bolt Installation: Hilti "HIT-RE 500-SD” Adhesive Anchor System", Simpson Strong-Tie “SET XP”, or equal.

I. Detectable Warning - Truncated Domes & Nosing:

1. Spacing, height and configuration of truncated domes shall meet CBC 11B-705. Base diameter of 0.9 inch min. and 0.92 inch max, a top diameter of 0.45 inch minimum and 0.47 inch maximum, and a height of 0.2 inch. Dome spacing shall have center to center 2.3 inch min. and 2.4 inch max., and a base-to-base spacing of 0.65 inch minimum.

2. Amstep Model 224A, 2-3/8 inches wide, and meets the California Title 24 code for the visually impaired. Tread 5/16 inch thick with continuous arrow profile anchor 5/8 inch deep. The abrasive filler shall consist of a mixture of aluminum

oxide and silicon granules in an epoxy resin and hardener mixture and locked into an extruded base, alloy 6063-T6. Coefficient of friction 1.02 dry, 0.98 wet per ASTM F 609. Abrasive filler color as selected.

2.02 MIXES

A. Design Criteria

1. Concrete shall develop the minimum compressive strength noted on the Contract Documents at 28 days on cylinders made and tested in accordance with referenced ASTM standards.

2. The average of the sets of three consecutive strength tests shall be equal to or greater than the specified strength, and no individual strength test results shall fall below the specified strength by more than 500 psi.

B. General

1. Mix designs shall be in conformance with CBC Section 1905, based on materials tested and approved by the Testing Laboratory.

2. If concrete will be pneumatically placed, mixes shall be specifically so designed and designated.

3. If concrete is to be pumped, mixes shall be specifically so designed and designated.

C. Nonshrink Grout: Mix in accordance with the manufacturer’s printed instructions.

D. Dry Pack: Mix, in proportions by volume, one-part cement to two-and-one-half parts fine aggregate, screening out materials retained on a No. 4 sieve. Mix with water to a consistency so that when a ball of mixture is compressed in the hand, it will show finger marks but maintain its shape and not show any surface water.

E. Patching Mortar: Mix in proportion by volume, one part cement to two parts fine aggregate.

2.03 MIXING

A. Batch Plant:

1. Equipment and plant shall be capable of weighing, segregating, and efficiently handling materials. Automatic metering capable of determining moisture content of sand shall be utilized.

2. Equipment and plant shall be subject to the approval of the Testing Laboratory; equipment and processes not so approved shall not be used for the work.

B. General:

1. Mixing shall be in conformance with ASTM C94 and CBC.

2. Mix cement, fine and coarse aggregate, admixtures, and water to exact proportions of approved mix designs.

3. Measure fine and coarse aggregates separately according to approved method which affords accurate control and checking.

4. Adjust grading to improve workability; do not add water unless otherwise recommended by the Owner.

C. Admixtures: use automatic metering dispenser to incorporate admixtures into mix

2.04 CONCRETE CLASSES

A. Definitions:

1. Strength: Minimum compressive strength after 28 days, when tested in accordance with ASTM C39.

2. Aggregate: Maximum size.

3. Weight: Pounds per cubic foot, air dry.

4. Slump: When tested in accordance with ASTM C143.

5. Maximum water/ cement ratio of 0.45

B. Concrete Classes and Uses:

Class	Weight (psf)	Strength (psi)	Aggregate (inches)	Use
A	145	4000	3/4	Cast-In-Place Concrete, Concrete Foundations, Concrete Slabs, etc.
B	110	3000	5/8	Sand Lightweight Concrete over metal deck

PART 3 EXECUTION

3.01 PREPARATION

A. Prior to concrete placement, determine finishes required to accommodate the work of other sections, and prepare for such finishes. Where determination for such finishes may be in question, refer to Owner for resolution.

B. Remove loose dirt/foreign material from excavations and forms and standing and saturated soil from excavations and cavities. Placing concrete in standing water is not permitted.

C. Thoroughly clean reinforcement and other items to be embedded in concrete of loose rust and other foreign matter which could inhibit bond with concrete.

D. Thoroughly wet wood forms, except coated plywood, and adjacent concrete a minimum of one hour prior to placing concrete; securely close cleanout and inspection ports; repeat wetting as required to keep forms damp.

E. Work form release agent into all areas of form liner as recommended by form manufacturer.

F. Apply form release agent to form liners before each use and within the same day that concrete is placed.

G. Subgrade and forms shall have been checked for line and grade, and work areas shall have been inspected by Engineer and observed by the Owner prior to starting concrete placement.

H. Roughen surfaces +/- ¼" amplitude at all joints and at all contact surfaces between new and existing concrete. Provide shear keys and prepare joints as per Drawings and Specifications. Apply bonding agent between existing and new concrete pours.

3.02 TRANSPORTING

A. Transport concrete from the mixer to the place of final deposit as quickly as possible, and by methods which prevent the separation and loss of ingredients. Concrete shall be of uniform density when placed.

B. Concrete shall not be freely dropped where reinforcement will cause segregation. Spouts, elephant trunks, or other approved means shall be utilized to prevent segregation.

C. In no case shall concrete be freely dropped more than six (6) feet. Provide formwork with pour ports at four (4) feet or closer horizontally so that concrete will be deposited freely such that no more than six (6) feet is dropped at any location.

D. Concrete may be pumped from the mixer to the place of deposit, provided that information on mix design adjustments, equipment, and procedures have received the Owner's written approval.

3.03 PLACING

A. General:

1. Notify Owner a minimum of 72 hours prior to each major concrete placement.

2. Place concrete in a continuous operation until a section of approved size and shape has been completed.

3. For horizontal surfaces, maintain a plastic surface essentially horizontal until completion of placement of the section.

4. Prevent displacement of reinforcement and other items to be embedded.

5. Before concrete sets, completely remove concrete spilled on forms and reinforcement in sections where concrete is not to be immediately installed.

6. An interruption of more than 60 minutes in concrete placement will be cause for shutting down the work and disposing of remaining mixed concrete. If such interruption occurs, provide construction joints where and as instructed, and cut concrete back to such line, cleaning forms and reinforcement as specified.

7. Record the date and time of concrete placement in each section. Retain records until completion of the work and make available at all times to the review of the Owner.

B. Consolidation:

1. Thoroughly consolidate concrete by puddling with suitable tools during placement, and by thoroughly working around reinforcement and other embedded items.

2. In addition to manual spading and tamping, internally vibrate concrete with high-speed mechanical vibrators of sufficient amplitude for thorough consolidation.

3. Prevent formation of shoulders and ledges.

4. Provide keys across vertical joints as shown on drawings. Place dowels across joints.

5. Joints for Slabs on Grade: Locate construction joints where approved and under partitions, whenever possible.

3.04 PROTECTION AND CURING

A. Protection:

1. Maintain concrete temperature above 50 degrees F during curing.

2. Protect concrete from sun and rain.

3. Do not subject concrete to loads until it has completely cured and attained minimum 28-day strength.

4. Water cure concrete continuously for minimum duration specified, including Saturdays, Sundays, and holidays; do not permit it to dry out until it has cured for the specified time.

5. Protect concrete during/after curing from damage from construction operations.

6. Cover traffic areas with kraft paper and plywood sheets; maintain protective covering in place and in good repair as long as necessary to protect concrete from damage.

7. Keep finished areas free from traffic for a minimum of four days, or as long as necessary for concrete to have set sufficiently to prevent its being damaged.

B. Curing: Curing shall immediately follow finishing and shall be performed as follows.

1. Flatwork Surfaces: Membrane cure for a minimum of seven days.

3.05 DEFECTIVE CONCRETE

A. Repair or replace defective concrete as instructed by Owner, and at no additional expense to Owner. Repair materials shall include, as necessary, cements, aggregates, admixtures, and epoxy.

B. With written approval of Owner, some minor defective work may be repaired by use of cement mortar; however, if the defects affect the strength of the structure, its appearance, or are otherwise detrimental, Owner may require the removal and replacement of that portion of the structure.

END OF SECTION

PART 1 GENERAL

1.1 DESCRIPTION

A. This section specifies the requirements for materials, proportioning, and application of shotcrete using either dry-mix or wet-mix process.

1.2 DEFINITION

A. Mortar or concrete pneumatically projected at high velocity onto a surface; also known as air-blown mortar; also pneumatically applied mortar or concrete, sprayed mortar and gunned concrete.

1.3 RELATED WORK

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.4 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Design Mix: Test Reports and Proportions.

C. Shop Drawings: Reinforcing Steel.

D. Two 300 mm x 300 mm x 25 mm (12 inch by 12 inch by 1 inch) sample panels showing required finish. Submit panels within 30 days after receipt of notice to proceed.

E. Aggregate gradation.

F. Certificates: Contractor's qualifications as specified.

1.5 QUALITY CONTROL

A. Contractor Qualifications.

1. Work in this section shall be provided only by a Contractor specializing in and possessing the equipment, knowledge, and skilled operators for application of shotcrete.

2. Furnish evidence to Resident Engineer that Contractor conforms to above requirements, has been specializing in this work for a period of at least five years, and will use only experienced shotcrete foremen, nozzlemen and delivery equipment operators on the work.

3. Conform to ACI 506R, Paragraphs 4.2 and 4.3, for qualifications and duties of craftsmen.

B. Tolerances:

1. Cover of reinforcement: ACI 506.2, Paragraph 3.6.2.

2. Alignment and thickness of shotcrete shall be controlled by installing ground wires. Alignment and thickness control shall conform to ACI 506R Section 5.6.

1.6 PRECONSTRUCTION TESTING

A. Conform to the requirements of ACI 506R, Paragraph 6.4.

B. Testing laboratory approved by the Resident Engineer and reimbursed by Contractor shall design dry or wet mix, as applicable, to produce compressive strengths indicated on drawings.

C. Make 2 test panels for each mix design, 450 mm (18 inches) square and 75 mm (3 inch) minimum thickness. Take 5 cores or cubes from each 75 mm (3 inch) panel for compressive strength testing in accordance with ACI 506R, Paragraph 6.4.

1.7 CONSTRUCTION TESTING

A. Make one test panel 450 mm (18 inches) square and 75 mm (3 inches) thick for each half-day's work or portion thereof. Provide test panels to a testing laboratory approved by Resident Engineer and reimbursed by the contractor. Five compressive strength specimens will be obtained from each panel and tested for compressive strength in accordance with ASTMC42. Two (2) samples are to be tested at 7 days and 28 days after application. The fifth sample should be retained for 56 days should additional testing be required. Strength test results are to be reported to the Resident Engineer 24 hours after completion of test.

1.8 DELIVERY, HANDLING, AND STORAGE

A. Properly deliver and handle materials to prevent contamination, segregation, or damage to materials.

B. Store cement in weathertight enclosures to protect against dampness and contamination.

C. Prevent segregation and contamination of aggregates by proper arrangement and use of stockpiles.

D. Store admixtures properly to prevent contamination, evaporation, freezing, or other damage.

1.9 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.

B. American Concrete Institute (ACI):

304R-00(2009)	Guide for Measuring, Mixing, Transporting, & Placing Concrete
506R-05	Guide to Shotcrete
506.2-95	Specification for Shotcrete

506.4R(R2004)	Guide for the Evaluation of Shotcrete

C. American Society for Testing and Materials (ASTM):

A615/A615M-09 Reinforcement	Deformed and Plain Carbon Steel Bars for Concrete
A1064/A1064M	Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
C33/C33M-11	Concrete Aggregates
C94/C94M-10	Ready-Mixed Concrete
C150/C150M-09	Portland Cement
C260/C260M-10	Air-Entraining Admixtures for Concrete
C494/C494-10	Chemical Admixtures for Concrete

PART 2 PRODUCTS

2.1 MATERIALS

A. Portland Cement: ASTM C150, Type I or II.

B. Aggregate: ASTM C33, Gradation Table 2.1

TABLE 2.1 -- GRADATION LIMIT FOR COMBINED AGGREGATES

Sieve Size, U.S. standard square mesh	Percent by Weight Passing Individual Sieves		
	Gradation No. 1	Gradation No. 2	Gradation No. 3
20 mm 3/4 inch	---	---	100
13 mm 1/2 inch	---	100	80-95
10 mm 3/8 inch	100	90-100	70-90
No. 4	95-100	70-85	50-70
No. 8	80-100	50-70	35-55
No. 16	50-85	35-55	20-40
No. 30	25-60	20-35	10-30
No. 50	10-30	8-20	5-17
No. 100	2-10	2-10	2-10

C. Chemical Admixtures: ASTM C494.

D. Air-entraining Admixture: ASTM C260.

E. Water: Fresh, Clean, and Potable

F. Reinforcing Steel: ASTM A615, grade as shown.

G. Welded Wire Fabric: ASTM A1064/A1064M.

PART 3 EXECUTION

3.1 PROPORTIONING, DELIVERY AND MIXING

A. Proportioning: Mix shall be designed by Contractor-retained testing laboratory; see "PRECONSTRUCTION TESTING" hereinbefore. Maintain water-cement ratio between 0.35 to 0.50 by weight.

B. Mixing Processes:

1. Mixing, General: Strength of mix is specified on the drawings. At Contractor's option, use either the dry or wet mix process. Discharge entire batch before recharging. Clean mixer at least once every 8-hour shift or portion thereof.

Reject material mixed and standing for 45 minutes; remixing or tempering not permitted.

2. Dry Mix Process: Conform to ACI 506R, Paragraph 1.6.1.

3. Wet Mix Process: Conform to ACI 506R, Paragraph 1.6.2.

3.2 EQUIPMENT, DRY MIX PROCESS

A. Batching and Mixing Equipment: Batch by weighing, use rotating mixer or adequate capacity for dry-mixing aggregate and cement for continuous supply of material to gun, all conforming to ACI 506R, Paragraph 3.5.

B. Delivery equipment:

1. Gun and Nozzle: Premixing type conforming to the requirements of ACI 506R, Paragraphs 3.2 and 3.7 designed for material delivery and water injection.

2. Air Compressor and Hoses: Standard type, of capacity to provide without interruption, pressures and volume of air necessary for longest hose delivery; conform to ACI 506R, Table 3.1. Make allowances for air consumed by separate blow pipe in blowing away rebound, cleaning reinforcing and incidental uses.

3. Water Supply: Conform to ACI 506R, Paragraph 3.8.1 with adequate capacity to maintain water pressure approximately 65 N (15 pounds) higher than highest air pressure required, both air and water pressure uniformly steady, non-pulsating.

3.3 EQUIPMENT, WET MIX PROCESS

A. Batching and Mixing Equipment: ACI 506R, Paragraph 3.5. Batch by weighing; use rotating mixing equipment and mix in accordance with ACI 304R, and ASTM C94 for ready-mixed concrete.

B. Delivery Equipment: Use pneumatic feed or positive displacement type of design and size capable of delivering premixed materials accurately, uniformly and continuously through the hose, all in accordance with ACI 506R, Paragraphs 3.3 and 3.7.

C. Air Supply: ACI 506R, Paragraph 3.4.2.

3.4 ALIGNMENT CONTROL

A. General: To establish thickness and surface planes or shotcrete build-up provide ground wires, taut, secure, true to line and plane, conforming to ACI 506R, Paragraph 5.6.

B. Reinforcing Positioning: Check that reinforcing is positioned and sized all in accordance with ACI 506R, Paragraph 5.4.

3.5 EXHAUST SYSTEM

A. Construct a sealed air barrier around immediate area of work as approved by Resident Engineer. Construct a sealed air barrier prior to any application within confines of the Medical Center.

B. Continuously exhaust work area to outside creating a negative pressure within area. Do not locate air exhaust near any Medical Center air intakes.

3.6 SHOOTING

A. General: ACI 506R, Paragraph 8.5.7. Shoot and fill corners first, with continuous uniform material flow from nozzle held approximately 600 mm to 1500 mm (2 to 5 feet) from the work, at angle normal to the surface.

1. Shoot around reinforcing with nozzle close to encase reinforcement as illustrated in ACI 506R, Figure 8.4, left column.

2. If flow is not uniform and slugs, sand spots or wet sloughs result, turn nozzle away until faulty work is cut out and repaired.

3. Do no shotcrete work if temperature is below 40 C (40 0 F) without providing continuous heat and adequate protection from freezing.

B. Preparation of Surfaces to Receive Shotcrete: ACI 506R, Paragraph 5.2, as applicable to the work, as approved.

C. Rebound: ACI 506R, Paragraph 8.5.10. Do not work rebound into construction nor salvage rebound for subsequent batching.

D. Suspend application if:

1. High wind prevents nozzlemen from proper application of material.

2. Weather approaches freezing and shotcrete cannot be protected.

3. Rain, other than a very light sprinkle, occurs which would wash cement out of freshly placed material.

E. Time Between Coats:

1. In sloping, vertical or overhanging work, allow interval of time sufficient for initial, but not final, set to develop.

2. At development of initial set, lightly broom surface to remove any laitance to provide better bond with succeeding applications.

F. Construction Joints:

1. ACI 506R, Paragraph 5.7, tapering over a width of 300 mm (1 foot) to a 25 mm (1 inch) edge from board laid flat.

2. Before proceeding with additional shotcrete work, thoroughly clean joint and adjacent shotcrete, then wet and scour surfaces with air jet.

G. Warm Weather Application: Prevent dry-out resulting in cracking and separation by keeping surfaces continuously moist and/or covered with continuously moistened burlap for 7 days after shotcreteing.

H. Surface Finish: Bring final surfaces of shotcrete to an even plane, well formed corners either square or to radius shown, working up to ground wires using somewhat lower placing velocity than normal.

1. Remove ground wires to 20 mm (3/4 inch) back from surface and fill holes with shotcrete to adjacent surface elevations.

2. Wood float surfaces to provide a smooth true finish.

3.7 CURING

A. ACI 506.2, Paragraph 3.7.

3.8 HOT WEATHER SHOTCRETING

A. ACI 506R, Paragraph 8.8.

3.9 COLD WEATHER SHOTCRETING

A. ACI 506R, Paragraph 8.9.

3.10 PROTECTION AND CLEAN-UP

A. Protection: Protect adjacent walls, windows, doors, other building surfaces, grounds and/or shrubs and property of others from damage by shotcreteing, rebound and dust.

1. Construct a sealed dust partition to confine rebound and dust to the immediate work area. Dust partitions shall be integral with exhaust system. A negative air pressure shall be maintained within partitioned area during shotcrete applications to prevent dust leakage beyond area.

2. Immediately clean all shotcrete materials and remove all rebound from site.

B. Clean-up: Continuously remove rebound material to ensure that base, intermediate, and finish surfaces are clean and ready for bonding layers.

3.11 DEFECTIVE WORK

A. General work will be evaluated by the Resident Engineer or designated agent in accordance with ACI 506.4. If the evaluation reveals unbonded work or cores fail to meet specified strengths, or finishes are unsatisfactory, repair such defective work, as approved, without additional cost to the Owner.

END OF SECTION

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PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. This Section includes a self-leveling underlayment that consists of a blend of Portland cement and other hydraulic cements and polymers that is used to level and smooth interior concrete, terrazzo, well-bonded ceramic & quarry tile, epoxy coating systems, wood, metal and properly prepared, non-water-soluble adhesive residue on concrete prior to the installation of finish flooring on all grade levels.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 REFERENCES

A. ASTM C109M, Compressive Strength Air-Cure Only

B. ASTM C348, Flexural Strength of Hydraulic-Cement Mortars

C. ASTM F2170, Relative Humidity in Concrete Floor Slabs Using in situ Probes

D. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring

1.04 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used. Include manufacturer’s Safety Data Sheets.

B. Qualification Data: For Installer

1.05 QUALITY ASSURANCE

A. Installation of the product must be completed by a factory-trained applicator using mixing equipment and tools approved by the manufacturer.

B. Product must have a hydraulic cement-based inorganic binder content as the primary binder which includes portland cement per ASTM C150: Standard Specification for Portland Cement and other specialty hydraulic cements. Gypsum-based products are not acceptable.

C. Manufacturer Experience: Provide products of this section by companies which have successfully specialized in production of this type of work for not less than 10 years. Contact Manufacturer Representative prior to installation.

1.06 WARRANTY

A. Contact Manufacturer for comprehensive warranty, depending on the system installed.

1.07 DELIVERY, STORAGE AND HANDLING

A. Deliver products in original packaging, labeled with product identification, manufacturer, batch number and shelf life.

B. Store products in a dry area with temperature maintained between 50° and 85°F (10° and 29°C) and protect from direct sunlight.

C. Handle products in accordance with manufacturer's printed recommendations.

1.08 CONDITIONS

A. Do not install material below 50°F (10°C) surface and air temperatures. These temperatures must also be maintained during and for 48 hours after the installation of products included in this section. Install quickly if the substrate is warm and follow warm weather instructions per Manufacturer’s instructions.

PART 2 PRODUCTS

2.01 MATERIAL

A. Hydraulic Cement-Based Self-Leveling Underlayment

1. Basis-of-Design Products or approved equal:

a. ARDEX K 15; Manufactured by ARDEX AMERICAS, USA, (724) 203-5000, www.ardexamericas.com

i. Primer:

1) Standard Absorbent Concrete: ARDEX P 51 Primer

2) Extremely Absorbent Concrete: May require two applications of ARDEX P 51 to minimize the potential for pinholes forming in the ARDEX K 15.

3) Wood: ARDEX P 82 Ultra Prime

4) Metal: ARDEX EP 2000 Substrate Preparation Epoxy Primer

5) Other Non-Porous Substrates (burnished concrete, terrazzo, well- bonded ceramic, quarry and porcelain tiles, epoxy coating systems and non-water soluble adhesive residue on concrete and concrete treated with

silicate compounds): ARDEX P 82 Ultra Prime

ii. Performance and Physical Properties: Meet or exceed the following values for material cured at 73° F+/-3°F (23° C+/-3°C) and 50% +/-5% relative humidity:

1) Application: Barrel Mix or Pump

2) Flow Time: 10 minutes

3) Walkable: 2 to 3 hours

4) Compressive Strength: 5,500 psi (385 kg/cm2) at 28 days, ASTM C109M

5) Flexural Strength: 1,200 psi (84 kg/cm2) at 28 days, ASTM C348

6) VOC: 0

2.02 WATER

A. Water shall be clean, potable, and sufficiently cool (not warmer than 70°F).

PART 3 EXECUTION

3.01 PREPARATION

A. General: Prepare substrate in accordance with manufacturer's instructions.

1. Concrete:

a. Prior to proceeding please refer to ASTM F710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring. All concrete subfloors must be sound, solid, clean, and free of all oil, grease, dirt, curing compounds and any substance that might act as a bond breaker before priming. Mechanically clean if necessary using shot blasting or other. Acid etching and the use of sweeping compounds and solvents are not acceptable.

b. Substrates shall be inspected in accordance with ASTM F2170 and corrected for moisture or any other conditions that could affect the performance of the underlayment or the finished floor covering. For areas where moisture vapor emissions exceed the required limits coordinate with Basis-of-Design Manufacturer to install an appropriate Moisture Control System.

B. Crack and Joint Preparation:

1. Moving Joints and Moving Cracks – honor all expansion, isolation joints and moving cracks up through the underlayment. Install a flexible sealing compound per Basis-of Design Manufacturer's instructions.

2. Saw Cuts, Dormant Control Joints and Dormant Cracks – fill all dormant control joints and dormant cracks with a Low Viscosity Rigid Polyurethane Crack & Joint Repair or Cement-Based Finish Underlayment as recommended by the manufacturer.

C. Wooden subfloors: The wood subfloor either must be solid hardwood flooring; a minimum of 3/4” (19 mm) tongue-and-groove, APA-rated Type 1, exterior exposure plywood; or an approved OSB equivalent. The wood subfloor must be constructed according to prevailing building codes and must be solid and securely fixed to provide a rigid base free of undue flex. Any boards exhibiting movement must be refastened to create a sound, solid subfloor. The wood must be clean and free of all foreign matter. If necessary, sand down to bare wood. Vacuum to remove all dust. Do not use solvent, strippers or cleaners. Open joints should be filled as recommended by the Basis-of-Design manufacturer. It is the responsibility of the installation contractor to ensure that the wood subfloor is thoroughly clean and properly anchored prior to installation.

D. Metal subfloors: Metal subfloors must be rigid, well supported, properly anchored and free of undue flex and vibration. They must also be clean and free of all rust, corrosion and foreign matter.

1. Non-lead metal substrates must be mechanically cleaned and profiled to create a bonding surface. Please note that care must be taken when mechanically preparing thin metal foils so that the metal foil is not compromised. Use an #80 or #100 grit sanding screen to mechanically profile the metal surface. A hand or floor sander may be used. After sanding, thoroughly deep vacuum to remove all loose material, and then wipe the metal using a clean, white cloth dampened with 91% isopropyl alcohol. Repeat wiping using a new cloth on each pass until the degree of discoloration on the cloth remains consistent on subsequent passes (typically, approx. 5 – 7 passes). Lightly shot blasting also is suitable. From this point until the metal has been primed, disposable shoe covers should be worn by anyone traversing the surface of the prepared metal. Allow 15 – 20 minutes for residual alcohol to evaporate before proceeding. Contact the Technical Service Department for guidelines on preparing lead substrates.

E. Adhesive residues on concrete must first be tested to make certain they are not water-soluble. Water-soluble adhesives must be completely mechanically removed down to clean concrete. Non- water-soluble adhesives should be prepared to a thin, well-bonded residue using the wet-scraping technique as recommended by the Resilient Floor Covering Institute (www.rfci.com). The prepared residue should appear as nothing more than a transparent stain on the concrete after scraping.

F. Non-porous subfloors such as ceramic, porcelain and quarry tile, burnished concrete, epoxy coating systems as well as terrazzo should be clean and free of all waxes, sealers, dust, dirt, debris and any other contaminant that may act as a bond breaker. If necessary, clean by mechanical methods such as shot blasting.

3.02 APPLICATION

A. Examine substrates and conditions under which materials will be installed. Do not proceed with installation until unsatisfactory conditions are corrected.

B. Coordinate installation with adjacent work to ensure proper sequence of construction. Protect adjacent areas from contact due to mixing and handling of materials.

C. Priming: Comply with manufacturer’s printed instructions

D. Mixing: Comply with manufacturer's printed instructions and the following.

1. For pump installations, the hydraulic cement underlayment shall be mixed using the Manufacturer’s recommended Automatic Mixing Pumps.

E. Application: Comply with manufacturer's printed instructions and the following:

1. Installations over metal and other non-porous substrates should be limited to a thickness of 1/2” (12.7 mm) unless otherwise approved by the Basis-of-Design Manufacturer. For all other substrates, self-leveling underlayment must be installed at a minimum thickness of 1/8” (3 mm) over the highest point in the floor, which typically results in an average thickness of 1/4” (6 mm) or more over the entire floor. Self-leveling underlayment can be installed up to 1 1/2” (4 cm) over large areas neat, and up to 5” (12.7 cm) with the addition of proper aggregate. Featheredge to match existing elevations. Confer with the Basis-of-Design Manufacturer if a true featheredge is needed.

2. Pour or pump the liquid and spread into place with Spreader. Immediately use the Smoother to smooth the surface. Wear non- metallic cleats to avoid leaving marks in the liquid.

3. Wood subfloors require mesh-reinforced Resilient Emulsion Underlayment System. After priming, install 3.4 galvanized diamond metal lath by stapling to the wooden subfloor approximately every 6 inches to center.

4. Metal subfloors require Resilient Emulsion Underlayment System.

F. Curing

1. Finished product can be walked on in 2-3 hours. Moisture-insensitive tiles such as ceramic, quarry and porcelain can be installed after 6 hours. All other finish floor coverings can be installed after 16 hours at 70°F (21°C). For resinous systems such as epoxy and polyurethane floors please contact the Basis-of-Design Manufacturer.

3.03 FIELD QUALITY CONTROL

A. Where specified, field sampling of the underlayment is to be done by taking an entire unopened bag of the product being installed to an independent testing facility to perform compressive strength testing in accordance with ASTM C 109/modified: air-cure only. There are no in situ test procedures for the evaluation of compressive strength.

3.04 PROTECTION

A. Prior to the installation of the finish flooring, the surface of the underlayment should be protected from abuse by other trades by the use of plywood, Masonite or other suitable protection course.

END OF SECTION

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PART 1 GENERAL

1.01 DESCRIPTION:

A. This section specifies structural steel shown and classified by Section 2, Code of Standard Practice for Steel Buildings and Bridges.

1.02 RELATED WORK:

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 QUALITY ASSURANCE:

A. Fabricator and erector shall maintain a program of quality assurance in conformance with Section 8, Code of Standard Practice for Steel Buildings and Bridges. Work shall be fabricated in an AISC certified Category Std fabrication plant.

B. Before authorizing the commencement of steel erection, the controlling contractor shall ensure that the steel erector is provided with the written notification required by 29 CFR 1926.752. Provide copy of this notification to the Resident Engineer.

1.04 TOLERANCES:

A. Fabrication tolerances for structural steel shall be held within limits established by ASTM A6, by AISC 303, Sections 6 and 7, Code of Standard Practice for Buildings and Bridges, except as follows:

B. Elevation tolerance for closure plates at the building perimeter and at slab openings prior to concrete placement is 6 mm (1/4 inch).

1.05 REGULATORY REQUIREMENTS:

A. AISC 360: Specification for Structural Steel Buildings

B. AISC 303: Code of Standard Practice for Steel Buildings and Bridges.

1.06 SUBMITTALS:

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples,

B. Shop and Erection Drawings: Complete

C. Certificates:

1. Structural steel.

2. Steel for all connections.

3. Welding materials.

D. Test Reports:

1. Welders' qualifying tests.

E. Design Calculations and Drawings:

1. Connection calculations, if required.

F. Record Surveys.

1.02 APPLICABLE PUBLICATIONS:

A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.

B. American Institute of Steel Construction (AISC):

1. AISC 360-10 Specification for Structural Steel Buildings

2. AISC 303-10 Code of Standard Practice for Steel Buildings and Bridges

C. American National Standards Institute (ANSI):

B18.22.1-65(R2008)..... Plain Washers

B18.22M-81(R2000)..... Metric Plain Washers

D. American Society for Testing and Materials (ASTM):

A6/A6M-11 ..... Standard Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling

A36/A36M-08 ..... Standard Specification for Carbon Structural Steel

A53/A53M-10 ..... Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless

A123/A123M-09 ..... Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

A242/A242M-04(R2009) ..... Standard Specification for High-Strength Low- Alloy Structural Steel

A283/A283M-03(R2007) ..... Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates

A307-10..... Standard Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength

A325-10..... Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength

A490-12..... Standard Specification for Heat-Treated Steel Structural Bolts 150 ksi Minimum Tensile Strength

A500/A500M-10a. ..... Standard Specification for Cold Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes

A501-07..... Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing

A572/A572M-07 ..... Standard Specification for High-Strength

Low-Alloy Columbium-Vanadium Structural Steel A992/A992M-11……Standard Specification for Structural Steel Shapes

E. American Welding Society (AWS):

D1.1/D1.1M-10..... Structural Welding Code-Steel

F. Research Council on Structural Connections (RCSC) of The Engineering Foundation:

Specification for Structural Joints Using ASTM A325 or A490 Bolts

G. Military Specifications (Mil. Spec.):

MIL-P-21035 ..... Paint, High Zinc Dust Content, Galvanizing, Repair

H. Occupational Safety and Health Administration (OSHA):

29 CFR Part 1926-2001..... Safety Standards for Steel Erection

PART 2 PRODUCTS

2.01 MATERIALS:

A. Structural Steel: ASTM A572 W Shapes, A36 misc. steel

B. Structural Tubing: ASTM A500, Grade B.

C. Steel Pipe: ASTM A53, Grade B.

D. Bolts, Nuts and Washers:

1. High-strength bolts, including nuts and washers: ASTM A325 or A490 as noted.

2. Bolts and nuts, other than high-strength or as shown on plans: ASTM A307, Grade A.

3. Plain washers, other than those in contact with high-strength bolt heads and nuts: ANSI Standard B18.22.1.

E. Zinc Coating: ASTM A123.

F. Galvanizing Repair Paint: Mil. Spec. MIL-P-21035.

PART 3 EXECUTION

3.01 CONNECTIONS (SHOP AND FIELD):

A. Welding: Welding in accordance with AWS D1.1. Welds shall be made only by welders and welding operators who have been previously qualified by tests as prescribed in AWS D1.1 to perform type of work required.

B. High-Strength Bolts: High-strength bolts tightened to a bolt tension not less than 70% of their minimum tensile strength. Tightening done with properly calibrated wrenches, by turn-of-nut method or by use of direct tension indicators (bolts or washers). Tighten bolts in connections identified as slip-critical using Direct Tension Indicators. Twist-off torque bolts are not an acceptable alternate fastener for slip critical connections.

3.02 FABRICATION:

A. Fabrication in accordance with Chapter M, AISC 360.

3.03 SHOP PAINTING:

A. General: Shop paint steel with primer in accordance with AISC 303, Section 6.

B. Do not apply paint to following:

1. Surfaces within 50 mm (2 inches) of joints to be welded in field.

2. Surfaces which will be encased in concrete.

3. Surfaces which will receive sprayed on fireproofing.

4. Top flange of members which will have shear connector studs applied.

C. Structural steel in the interstitial space that does not receive sprayed on fireproofing shall be painted with primer in accordance with general requirement of shop painting.

3.04 ERECTION:

A. General: Erection in accordance with AISC 303, Section 7B.

B. Temporary Supports: Temporary support of structural steel frames during erection in accordance with AISC 303, Section 7

3.05 FIELD PAINTING:

A. After erection, touch-up steel surfaces specified to be shop painted. After welding is completed, clean and prime areas not painted due to field welding.

B. Finish painting of steel surfaces is specified in Section 09 91 00, PAINTING.

3.06 SURVEY:

A. Upon completion of finish bolting or welding on any part of the work, and prior to start of work by other trades that may be supported, attached, or applied to the structural steel work, submit a certified report of survey to Resident Engineer for approval. Reports shall be prepared by Registered Land Surveyor or Registered Civil Engineer as specified in Section 01 00 00, GENERAL REQUIREMENTS. Report shall specify that location of structural steel is acceptable for plumbness, level and alignment within specified tolerances specified in the AISC Manual.

END OF SECTION

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PART 1 GENERAL

1.01 SUMMARY

A. This section specifies items and assemblies fabricated from structural steel shapes and other materials as shown and specified.

B. Items specified.

1. Support for Wall and Ceiling Mounted Items

2. Metal Railings

3. Bollards

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Shop Drawings:

1. Each item specified, showing complete detail, location in the project, material and size of components, method of joining various components and assemblies, finish, and location, size and type of anchors.

2. Mark items requiring field assembly for erection identification and furnish erection drawings and instructions.

3. Provide templates and rough-in measurements as required.

C. Furnish setting drawings and instructions for installation of anchors to be preset into concrete and masonry work, and for the positioning of items having anchors to be built into concrete or masonry construction.

1.04 QUALITY ASSURANCE

A. Each product type shall be the same and be made by the same manufacturer.

B. Assemble product to the greatest extent possible before delivery to the site.

C. Include additional features, which are not specifically prohibited by this specification, but which are a part of the manufacturer's standard commercial product.

1.05 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. American Society of Mechanical Engineers (ASME):

B18.2.2-87(R2005).....Square and Hex Nuts

C. American Society for Testing and Materials (ASTM):

A36/A36M-08 .....Structural Steel

A47-99(R2009).....Malleable Iron Castings

A53-10.....Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless

A123-09.....Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

A307-10.....Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength

A653/A653M-10 .....Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process

A786/A786M-09 .....Rolled Steel Floor Plate

C1107-08 .....Packaged Dry, Hydraulic-Cement Grout (Non-shrink)

F436-10.....Hardened Steel Washers

F1667-11.....Driven Fasteners: Nails, Spikes and Staples

D. American Welding Society (AWS):

D1.1-10 .....Structural Welding Code Steel

D1.3-08 .....Structural Welding Code Sheet Steel

E. National Association of Architectural Metal Manufacturers (NAAMM)

AMP 521-01 .....Pipe Railing Manual

AMP 500-06 .....Metal Finishes Manual

Structural Steel Painting Council (SSPC)/Society of Protective Coatings:

SP 1-04 .....No. 1, Solvent Cleaning

SP 2-04 .....No. 2, Hand Tool Cleaning

SP 3-04 .....No. 3, Power Tool Cleaning

1.06 DESIGN CRITERIA

A. In addition to the dead loads, design fabrications to support the following live loads unless otherwise specified.

B. Ladders and Rungs: 120 kg (250 pounds) at any point.

C. Railings and Handrails: 900 N (200 pounds) in any direction at any point.

PART 2 PRODUCTS

2.01 MATERIALS

A. Structural Steel: ASTM A36.

B. Floor Plate:

1. Steel ASTM A786.

2. Aluminum: ASTM B632.

C. Steel Pipe: ASTM A53.

1. Galvanized for exterior locations.

2. Coated for interior locations, see SECTION 09 06 00 for coating.

D. Cast-Iron: ASTM A48, Class 30, commercial pattern.

E. Grout: ASTM C1107, pourable type.

F. Steel Pipe (Bollard): ASTM A53.

1. Galvanized for exterior locations.

2. Type S, Grade A unless specified otherwise.

3. NPS (inside diameter) as shown.

2.02 HARDWARE

A. Rough Hardware:

1. Furnish rough hardware with a standard plating, applied after punching, forming and assembly of parts; galvanized, cadmium plated, or zinc-coated by electro-galvanizing process. Galvanized G-90 where specified.

2. Use G90 galvanized coating on ferrous metal for exterior work unless non-ferrous metal or stainless is used.

B. Fasteners:

1. Bolts with Nuts:

a. ASTM A307 for 415 MPa (60,000 psi) tensile strength bolts.

b. ASTM F593 for stainless steel.

c. Screws: ASME B18.6.1.

d. Washers: ASTM F436, type to suit material and anchorage.

e. Nails: ASTM F1667, Type I, style 6 or 14 for finish work.

2.03 FABRICATION GENERAL

A. Material

1. Use material as specified. Use material of commercial quality and suitable for intended purpose for material that is not named or its standard of quality not specified.

2. Use material free of defects which could affect the appearance or service ability of the finished product.

B. Size:

1. Size and thickness of members as shown.

2. When size and thickness is not specified or shown for an individual part, use size and thickness not less than that used for the same component on similar standard commercial items or in accordance with established shop methods.

C. Connections

1. Except as otherwise specified, connections may be made by welding, riveting or bolting.

2. Field riveting will not be approved.

3. Design size, number and placement of fasteners, to develop a joint strength of not less than the design value.

4. Holes, for rivets and bolts: Accurately punched or drilled and burrs removed.

5. Size and shape welds to develop the full design strength of the parts connected by welds and to transmit imposed stresses without permanent deformation or failure when subject to service loadings.

6. Use Rivets and bolts of material selected to prevent corrosion (electrolysis) at bimetallic contacts. Plated or coated material will not be approved.

7. Use stainless steel connectors for removable members machine screws or bolts.

D. Fasteners and Anchors

1. Use methods for fastening or anchoring metal fabrications to building construction as shown or specified.

2. Where fasteners and anchors are not shown, design the type, size, location and spacing to resist the loads imposed without deformation of the members or causing failure of the anchor or fastener, and suit the sequence of installation.

3. Use material and finish of the fasteners compatible with the kinds of materials which are fastened together and their location in the finished work.

4. Fasteners for securing metal fabrications to new construction only, may be by use of threaded or wedge type inserts or by anchors for welding to the metal fabrication for installation before the concrete is placed or as masonry is laid.

5. Fasteners for securing metal fabrication to existing construction or new construction may be expansion bolts, toggle bolts, power actuated drive pins, welding, self-drilling and tapping screws or bolts.

E. Workmanship

1. General:

a. Fabricate items to design shown.

b. Furnish members in longest lengths commercially available within the limits shown and specified.

c. Fabricate straight, true, free from warp and twist, and where applicable square and in same plane.

d. Provide holes, sinkages and reinforcement shown and required for fasteners and anchorage items.

e. Provide openings, cut-outs, and tapped holes for attachment and clearances required for work of other trades.

f. Prepare members for the installation and fitting of hardware.

g. Cut openings in gratings and floor plates for the passage of ducts, sumps, pipes, conduits and similar items. Provide reinforcement to support cut edges.

h. Fabricate surfaces and edges free from sharp edges, burrs and projections which may cause injury.

2. Welding:

a. Weld in accordance with AWS.

b. Welds shall show good fusion, be free from cracks and porosity and accomplish secure and rigid joints in proper alignment.

c. Where exposed in the finished work, continuous weld for the full length of the members joined and have depressed areas filled and protruding welds finished smooth and flush with adjacent surfaces.

d. Finish welded joints to match finish of adjacent surface.

3. Joining:

a. Miter or butt members at corners.

b. Where frames members are butted at corners, cut leg of frame member perpendicular to surface, as required for clearance.

4. Cutting and Fitting:

a. Accurately cut, machine and fit joints, corners, copes, and miters.

b. Fit removable members to be easily removed.

c. Design and construct field connections in the most practical place for appearance and ease of installation.

d. Fit pieces together as required.

e. Fabricate connections for ease of assembly and disassembly without use of special tools.

f. Joints firm when assembled.

g. Conceal joining, fitting and welding on exposed work as far as practical.

h. Do not show rivets and screws prominently on the exposed face.

i. The fit of components and the alignment of holes shall eliminate the need to modify component or to use exceptional force in the assembly of item and eliminate the need to use other than common tools.

F. Finish:

1. Finish exposed surfaces in accordance with NAAMM Metal Finishes Manual.

2. Aluminum: NAAMM AMP 501.

a. Mill finish, AA-M10, as fabricated, use unless specified otherwise.

b. Clear anodic coating, AA-C22A41, chemically etched medium matte, with Architectural Class 1, 0.7 mils or thicker.

c. Colored anodic coating, AA-C22A42, chemically etched medium matte with Architectural Class 1, 0.7 mils or thicker.

d. Painted: AA-C22R10.

3. Steel and Iron: NAAMM AMP 504.

a. Zinc coated (Galvanized): ASTM A123, G90 unless noted otherwise.

b. Surfaces exposed in the finished work:

1) Finish smooth rough surfaces and remove projections.

2) Fill holes, dents and similar voids and depressions with epoxy type patching compound.

c. Shop Prime Painting:

1) Surfaces of Ferrous metal:

a) Items not specified to have other coatings.

b) Galvanized surfaces specified to have prime paint.

c) Remove all loose mill scale, rust, and paint, by hand or power tool cleaning as defined in SSPC-SP2 and SP3.

d) Clean of oil, grease, soil and other detrimental matter by use of solvents or cleaning compounds as defined in SSPC-SP1.

e) After cleaning and finishing apply one coat of primer as specified in Section 09 90 00, PAINTING.

4. Stainless Steel: NAAMM AMP-504 Finish No. 4.

G. Protection:

1. Spot prime all abraded and damaged areas of zinc coating which expose the bare metal, using zinc rich paint on hot-dip zinc coat items and zinc dust primer on all other zinc coated items.

2.04 SUPPORTS

A. General:

1. Fabricate ASTM A36 structural steel shapes where shown.

2. Use clip angles or make provisions for welding hangers and braces to overhead construction.

3. Field connections may be welded or bolted.

B. For Wall Mounted Items:

1. For items supported by metal stud partitions.

2. Steel strip minimum of 150 mm (6 inches) wide, length extending one stud space beyond end of item supported.

C. For Trapeze Bars:

1. Construct assembly above ceilings as shown and design to support not less than a 340 kg (750 pound) working load at any point.

2. Fabricate trapeze supports as shown, with all exposed members, including screws, nuts, bolts and washers, fabricated of stainless steel.

3. Continuously weld connections where welds shown.

4. Use modular channel where shown with manufacturers bolts and fittings.

2.05 GATE HINGES LATCH AND STOP

A. Manufacturer: Tymetal, Hoover Fence Co., or approved equal

B. Galvanized ASTM A123, G-90 after fabrication.

C. Doors:

1. Provide pre-fabricated steel hinged door and frame as shown.

2. Color: to match fence color

3. Hardware:

a. Install lock or latch specified in Section 08 71 00, DOOR HARDWARE.

2.06 METAL RAILING

A. In addition to the dead load design railing assembly to support live load specified.

B. Fabrication General:

1. Provide continuous welded joints, dressed smooth and flush.

2. Standard flush fittings, designed to be welded, may be used.

3. Exposed threads will not be approved.

4. Form handrail brackets to size and design shown.

5. Interior Post Anchors:

a. Provide flanged fittings for securing fixed posts to floor with expansion bolts, unless shown otherwise.

b. Weld or thread flanged fitting to posts at base.

c. For securing removable posts to floor, provide close fitting sleeve insert or inverted flange base plate with stud bolts or rivets concrete anchor welded to the base plate.

d. Provide sliding flange base plate on posts secured with set screws.

e. Weld flange base plate to removable posts set in sleeves.

C. Handrails:

1. Close free ends of rail with flush metal caps welded in place except where flanges for securing to walls with bolts are shown.

2. Make provisions for attaching handrail brackets to wall, posts, and handrail as shown.

D. Aluminum Railings:

1. Fabricate from extruded aluminum.

2. Use tubular posts not less than 3 mm (0.125 inch) wall thickness for exterior railings.

3. Punch intermediate rails and bottom of top rails for passage of posts and machine to a close fit.

4. Where shown use extruded channel sections for top rail with 13 mm (1/2 inch) thick top cover plates and closed ends.

5. Fabricate brackets of extruded or wrought aluminum as shown.

6. Fabricate stainless pipe sleeves with closed bottom at least six inches deep having internal dimensions at least 13 mm (1/2 inch) greater than external dimensions of posts where set in concrete.

2.06 METAL LADDER

A. Aluminum Ladders:

1. Fixed-rail type, constructed of structural aluminum, with mill finish.

2. Fabricate side rails and rungs of size and design shown, with the rungs shouldered and headed into and welded to the rails.

3. Where shown fabrication side rails curved, twisted and formed into gooseneck.

4. Fabricate angle brackets at top and bottom and intermediate brackets where shown. Drill for bolting.

B. Ladder Rungs:

1. Fabricate from 25 mm (one inch) diameter steel bars.

2. Fabricate so that rungs will extend at least 100 mm (4 inches) into wall with ends turned 50 mm (2 inches), project out from wall 175 mm (7 inches), be 400 mm (16 inches) wide and be designed so that foot cannot slide off end.

3. Galvanized after fabrication, ASTM A123, G-90 rungs for exterior use and for access to pits.

2.07 STEEL PIPE BOLLARD

A. Provide bollard in accordance with ASTM A53 with dimensions as shown in standard detail SD320523-04. Anchor posts in concrete and fill solidly with concrete with a minimum compressive strength of 17 MPa 2500psi.

PART 3 EXECUTION

3.01 INSTALLATION, GENERAL

A. Set work accurately, in alignment and where shown, plumb, level, free of rack and twist, and set parallel or perpendicular as required to line and plane of surface.

B. Set frames of access doors and similar items flush with finish floor and, where applicable, flush with side of opening.

C. Field weld in accordance with AWS.

1. Design and finish as specified for shop welding.

2. Use continuous weld unless specified otherwise.

D. Install anchoring devices and fasteners as shown and as necessary for securing metal fabrications to building construction as specified.

E. Spot prime all abraded and damaged areas of zinc coating as specified and all abraded and damaged areas of shop prime coat with same kind of paint used for shop priming.

3.02 INSTALLATION OF SUPPORTS

A. Anchorage to structure:

1. Secure angles or channels and clips to overhead structural steel by continuous welding unless bolting is shown.

2. Secure supports to concrete inserts by bolting as shown.

3. Secure steel plate to studs as detailed.

B. Supports for Wall Mounted items:

1. Locate center of support at anchorage point of supported item.

2. Locate support at top and bottom of wall hung cabinets.

3. Locate support at top of floor cabinets and shelving installed against walls.

4. Locate supports where required for items shown.

C. Supports for Trapeze Bars:

1. Secure plates to overhead construction with fasteners where shown.

2. Secure angle brace assembly to overhead construction with fasteners where shown and bolt plate to braces.

3. Fit modular channel unit to equipment and secure with modular channel unit manufacturer's standard fittings as shown.

3.03 CLEAN AND ADJUSTING

A. Adjust movable parts including hardware to operate as designed without binding or deformation of the members centered in the opening or frame and, where applicable, contact surfaces fit tight and even without forcing or warping the components.

B. Clean after installation exposed prefinished and plated items and items fabricated from stainless steel, aluminum and copper alloys, as recommended by the metal manufacture and protected from damage until completion of the project.

3.04 INSTALLATION OF STEEL PIPE BOLLARD

A. Set bollards vertically in concrete piers. Compressive strength of concrete piers shall be 21MPa 3000psi. For dimensions of concrete piers

END OF SECTION

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PART 1 GENERAL

1.01 SUMMARY

A. Provide labor, materials and equipment to complete all rough and finish carpentry work as indicated in the Contract Documents.

B. Work of this section include rough carpentry, framing, plywood, composite lumber, sheathing, wood nailers, blocking, sleepers, curbs, cants, wood and hollow metal door frames rough framing, finish carpentry and miscellaneous installed finished items.

1. Establish lines and levels for use of other trades.
2. Create openings and lintels for increased door heights.

C. Provide labor, materials and equipment to shore, brace either temporarily or permanently wood ceiling systems to remain that will be disturbed during demolition and preparation of new walls and ceiling systems.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 REFERENCES

A. AHA A135.4 - Basic Hardboard; American Hardboard Association.

B. ANSI A208.1 - Wood Particleboard.

C. ASTM C1036 - Standard Specification for Flat Glass.

D. ASTM C1048 - Standard Specification for Heat-Treated Flat Glass - Kind HS, Kind FT Coated and Uncoated Glass.

E. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

F. AWI P-200 - Architectural Woodwork Quality Standards; Architectural Woodwork Institute.

G. AWPA C2 - Lumber, Timbers, Bridge Ties and Mine Ties - Preservative Treatment by Pressure Processes; American Wood Preservers Association.

H. NWWDA I.S.4 - Industry Standard for Water-Repellent Preservative Non-Pressure Treatment for Millwork; National Wood Window and Door Association.

I. NIST PS 1 - Construction and Industrial Plywood.

J. NIST PS 20 - American Softwood Lumber Standard.

K. WIC - Manual of Millwork; Woodwork Institute of California.

L. Forest Products Society (FPS): National Design Specification for Stress Grade Lumber and its Fastening.

1.04 SUBMITTALS

A. Product Data: Submit wood treatment certifications and instructions for proper use of each type of treated material.

B. Wood Product Certifications:

1. FSC Certification: Furnish certification indicating wood products are from “well-managed” forests.

2. Toxicity Certification: Furnish certification plywood has no added formaldehyde and has no toxic materials as defined by LEED.

1.05 QUALITY ASSURANCE

A. Lumber Grades: Provide visible grade stamp of an agency certified by FPS.

B. Lumber Standard: Comply with US Product Standard PS20 for each indicated use, including moisture content and actual sizes related to indicated nominal sizes.

C. Plywood Standard: Comply with PS1 (ANSI A199.1).

D. FSC Certified Wood Products: Wood products to be from forests certified “well-managed” by an agency accredited by Forest Stewardship Council (FSC) including SmartWood Program and Forest Conservation Program.

PART 2 PRODUCTS

2.01 MATERIALS

A. Blocking: Provide dimensional lumber graded in accordance with FPS Grading Rules; Construction Grade, Douglas Fir; minimum S-Dry.

B. Plywood: Provide minimum APA C-D exterior (CDX) plywood; stress rated where spanning between supporting members; fire retardant treated; minimum 3/4" thick unless otherwise indicated. Where plywood will be exposed in finished work with painted finish provide A-C/EXT-APA plywood with Grade A face exposed and Grade C face concealed

for exterior use: and A-C/INT-APA plywood with Grade A face exposed and Grade C face concealed for interior use.

1. General: Provide plywood certified with no added formaldehyde (NAF) and with no toxic materials as defined by LEED.

C. Nails, Spikes and Staples: Galvanized; size and type to suit application.

D. Bolts, Nuts, Washers, Lags, Pins and Screws: Medium carbon steel; galvanized; size and type to suit application.

E. Fasteners: Provide fasteners as required for complete, secure installation of miscellaneous rough carpentry.

1. Steel: Bolts or powder activated type.

E. Hardwood Lumber: Graded in accordance with WIC Custom; of quality suitable for transparent finish. Species as directed by architect.

F. Lumber for Shimming and blocking: Softwood lumber of Douglas fir species.

G. Primer: Alkyd primer sealer type.

H. Wood Filler: Solvent base, tinted to match surface finish color.

I. Wood Treatment: Water Repellant Preservative Treatment by Dipping Method: NWWDA I.S.4, with 0.25 percent retainage.

F. Wood Nailers

1. All lumber for concealer blocking, roof curbs, roof nailers shall be preservative treated hemlock, pine, or fir and shall be new lumber of the best quality available, perfectly sound, well-seasoned, and free from sapwood, large loose or dead knots, streaks and evidence of disease ort pests. Maximum moisture content shall be 15%.

G. Building Paper

1. 15 Lb. asphalt impregnated felt paper.

H. Recessed Mount Key Box

1. Knox Box, 3200 Series, recesses, 10 key steel vault, hinged door, color TBD. Located at main entry as directed by Owner.

2. Recessed, 50 key steel vault, dark bronze, located in basement mechanical room as directed by Owner. Heavy duty box.

I. Construction Adhesives

1. Products of Contech Division of Rexnord Chemical Corporation or equal as approved by Architect.
   a. Interior work dry areas – PL200
   b. Exterior work and wet areas – PL 400

c. Treated Wood – PL500

2.02 FABRICATION

A. Wood Preservation: Treat lumber and plywood to comply with applicable requirements of American Wood Preservers Association.

1. Decay Resistance Treatment: Pressure treat following items with water-borne preservatives for above ground use with AWPA C-2.

a. Treat wood members in connection with roofing, flashing, vapor barriers and waterproofing.

b. Treat wood members in contact with masonry, with concrete, and below grade.

c. Kiln-dry wood to a maximum moisture content of 19% after treatment with water-borne preservative.

2. Fire Retardant Treatment: Comply with AWPA standards for pressure impregnation with fire-retardant chemicals to achieve flame-spread rating of not more than 25 in accordance with ASTM E84 or UL Test 723.

a. Treat interior wood and plywood complying with AWPA C20 and C27, Interior Type A, and identify with FRTW.

1) Exterior Type: Where indicated for exterior applications, provide fire treated wood passing ASTM D2898 rain test.

b. Provide UL label on each piece of fire-retardant wood and plywood.

c. Kiln-dry treated items to maximum moisture content of 19%.

3. Complete fabrication of treated items prior to treatment, wherever possible; if cut after treatment, coat cut surfaces with heavy brush coat of same chemical used for treatment.

4. Inspect each piece after drying and discard damaged and defective pieces.

PART 3 EXECUTION

3.01 PLACEMENT

A. Place miscellaneous rough carpentry true to lines and levels.

B. Correlate location so attached work will comply with design requirements and be properly located.

C. Construct members of continuous pieces of longest possible lengths.

D. Fit carpentry work to other work; scribe and cope as required for accurate fit.

E. Shim with metal or slate for bearing on concrete and masonry.

F. Securely attach carpentry work to substrates by anchoring and fastening as required by recognized standards.

1. Provide washers under bolt heads and nuts in contact with wood.

G. Wood Blocking: Provide blocking of S4S lumber not less than 1-1/2" wide and of thickness required to provide adequate support or to properly locate attached material.

1. Provide attachment to other work; form to shapes shown.

2. Countersink bolts and nuts flush with surfaces.

3. Remove temporary blocking when no longer needed.

4. Anchor to formwork before concrete placement.

H. Plywood: Comply with recommendations of American Plywood Association (APA) for fabrication and installation of plywood work.

1. Provide attachment to other work; form to shapes shown.

2. Align fasteners for exposed view aesthetic as shown.

3. Fit carpentry work to other work.

4. Adjust, trim and level.

END OF SECTION 06 10 00

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PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Provide mill fabricated architectural woodwork with accessories as required for complete finished installation.

1. Provide wood veneer-faced cabinetwork.

2. Provide solid surface counter.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Product Data: Submit manufacturer’s literature for manufactured items.

C. Shop Drawings: Indicate materials and wood species, component profiles, fastening, joining details, finishes, and accessories.

1. Certification: Provide WI MoM Certified Compliance Label on shop drawings.

D. Samples: Furnish samples of each exposed material.

E. Certificates: "Manual of Millwork" (WI MoM) certification is required.

1. General: Before delivery to jobsite, provide WI MoM Certified Compliance Certificate indicating grade of millwork products to be furnished and certify WI MoM requirements for specified grades shall be met.

2. Casework: Each unit to bear WI MoM Certified Compliance Label.

3. Installation: Provide WI MoM Certified Compliance Certificate for Installation.

4. FSC Certification: Furnish certification indicating wood products are from “well-managed” forests.

5. Toxicity Certification: Furnish certification plywood has no added formaldehyde and has no toxic materials as defined by LEED.

1.04 QUALITY ASSURANCE

A. Fabricator Qualifications: Member of Woodwork Institute (formerly Woodwork Institute of California) with minimum five years successful experience fabricating architectural woodwork similar to that required for Project.

B. Standards: Perform architectural woodwork in accordance with recommendations Woodwork Institute "Manual of Millwork" (WI MoM).

C. Seismic Anchorage: Provide seismic anchorage for wall cabinets as required by CBC.

D. FSC Certified Wood Products: Wood products to be from forests certified “well-managed” by an agency accredited by Forest Stewardship Council (FSC) including SmartWood Program and Forest Conservation Program.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Do not deliver architectural woodwork until site conditions are adequate to receive work; protect items from weather while in transit.

1. Allow architectural woodwork shop finish to completely dry prior to delivery to site; allow materials to off-gas volatile organic compound (VOC) emissions off site.

B. Store materials indoors, in ventilated areas with constant but minimum temperature of 60 degrees F and maximum relative humidity of 25% to 55%.

C. Do not begin installation of architectural woodwork until space is fully enclosed and mechanical systems are fully operational.

1. Maintain interior installation areas at 70 degrees F and 50% to 55% relative humidity.

D. Immediately remove from site materials with visible mold and materials with mildew.

PART 2 PRODUCTS

2.01 MATERIALS

A. Wood Veneer Finished Casework:

1. Casework doors and exposed panels: Veneer finish per Architectural Finishes List, Section 09 06 00.

2. Factory Finish: Shop prime with polyurethane opaque finish;

a. Color and veneer species per Architectural Finishes List, Section 09 06 00.

B. Countertop:

1. Solid Polymer Systems: Manufacturer's standard polymer system with color throughout thickness; provide manufacturer recommended joint adhesive; exposed surfaces finished to match top.

a. Quality: Comparable to WI MoM/Premium Grade.

b. Type: Not less than 1/2" thick sheet designed to accept bowls as indicated and as specified in Division 15 and with edge conditions as indicated on Drawings.

c. Color: Manufacturer's standard color as selected by Architect.

d. Manufacturers:

1) DuPont Co./Corian.

2) Avonite, Inc./Avonite.

3) Formica Corp./Surell.

2. Core: Provide plywood with no added formaldehyde and no toxic materials.

C. Anchors, Nails and Screws: Select material, type, size and finish required by each substrate for secure anchorage; provide toothed steel or lead expansion bolt screws for drilled-in-place anchors.

2.02 FABRICATION

A. General: Fabricate architectural woodwork in accordance with specified quality standards.

B. Plastic Laminate:

1. Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes.

2. Make corners and joints hairline; slightly bevel arises.

3. Locate butt joints at least 2'-0" from cutouts.

4. Cap exposed edges with plastic laminate of same finish and pattern.

5. Apply laminate backing sheet to reverse side of laminate surfaces.

6. Provide cutouts for inserts, fixtures and fittings; verify locations from on-site dimensions.

7. Prime paint contact surfaces of cutouts.

C. Use exposed fastening devices or nails only when approved and unavoidable; arrange neatly.

D. Assemble woodwork in shop in sizes easily handled and to ensure passage through building openings.

PART 3 EXECUTION

3.01 EXAMINATION

A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication where possible; do not delay job progress, allow for trimming and fitting.

3.02 INSTALLATION

A. Install work consistent with specified quality grade, plumb, level, true and straight with no distortions.

1. Shim as required, using concealed shims.

B. Secure work to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation.

C. Scribe and cut for accurate fit to other finished work.

D. Route and prepare beams for installation of beam connectors and hangers.

E. Attach connectors to wall anchors and solid wood beams.

F. Attach architectural woodwork securely in place with uniform joints providing for thermal and building movements.

G. Attach countertop material to casework per manufacturer.

H. Acceptable Tolerances:

1. Variation from True Position: Maximum 1/16" at any position and maximum 1/8" in any 10'-0" length.

2. Adjoining Surfaces of Same Material: No variation permitted.

3. Offset with Abutting Materials: Maximum 1/32".

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes rubber waterproofing for below grade structures.

1.2 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.3 SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings:

1. Show locations and extent of waterproofing.
2. Include details for substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.

C. Sample warranty.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by waterproofing manufacturer.

1.5 WARRANTY

A. Manufacturer's Special Warranty: Manufacturer agrees to repair or replace waterproofing that fails in materials or workmanship within specified warranty period.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 RUBBER WATERPROOFING

A. Two-Component, Reinforced, Rubber Waterproofing system: ASTM C836/C836M; coal-tar free.

1. Basis-of-Design or Approved Equal:
   a. Manufacturer: GCP Applied Technologies Inc., 2325 Lakeview Parkway, Suite 400, Alpharetta, GA 30009, USA; gcpat.com; 1-866-333-3726
   b. Product: Procor Below Grade – Fluid applied waterproofing & all associated system components which include:

      1) Procor 75 Spray Grade – For horizontal and vertical applications
      2) Hydroduct Drainage Composites – Geocomposite Drainage Sheets
         a) HYDRODUCT® 660 Drainage Composite for use on horizontal applications.
         b) HYDRODUCT® 220 Drainage Composite for use on vertical applications.
      3) Bituthene Liquid Membrane – Detailing at pipe entries, etc.
      4) Preprufe Tape – For tie-ins of Procor, Bituthene, or Preprufe waterproofing sheet membranes.
      5) Preprufe 300R Plus – Pre-applied waterproofing membrane that bonds integrally to poured concrete

2. Hydrostatic-Head Resistance: 65 feet minimum; ASTM D5385/D5385M.

2.2 AUXILIARY MATERIALS

A. Primer: Manufacturer's standard primer, sealer, or surface conditioner; factory-formulated.

B. Sheet Flashing: 50-mil- (1.3-mm-) minimum, nonstaining, uncured sheet neoprene.

1. Adhesive: Manufacturer's recommended contact adhesive.

C. Membrane-Reinforcing Fabric: Manufacturer's recommended fiberglass mesh or polyester fabric.

D. Joint Reinforcing Strip: Manufacturer's recommended fiberglass mesh or polyester fabric.

E. Joint Sealant: Multicomponent polyurethane sealant, compatible with waterproofing; and as recommended by manufacturer for substrate and joint conditions.

1. Backer Rod: Closed-cell polyethylene foam.

2.3 PRE-APPLIED WATERPROOFING MEMBRANE – BELOW SLAB

A. Pre-Applied waterproofing membrane: Composite membrane comprised of a heavy duty grade HDPE film, pressure sensitive adhesive, and weather resistant protective coating to form an integral bond to poured concrete. Designed for horizontal and vertical use below slabs.

1. Thickness: 0.046 inch (1.2 mm), nominal
2. Lateral water migration resistance:

3. Hydrostatic-Head Resistance: 231 feet minimum; ASTM D5385.
4. Tensile strength: 4,000 psi (27.6 Mpa)
5. Required overlap: 3” minimum

2.4 PROTECTION COURSE

A. Protection Course: ASTM D6506, semirigid sheets of fiberglass- or mineral-reinforced-asphaltic core, pressure laminated between two asphalt-saturated fibrous liners and as follows:

1. Thickness: 1/4 inch (6 mm), nominal, for vertical applications; 1/4 inch (6 mm), nominal, elsewhere.
2. Adhesive: Rubber-based solvent type recommended in writing by waterproofing manufacturer.

2.5 MOLDED-SHEET DRAINAGE PANELS

A. Nonwoven-Geotextile-Faced, Molded-Sheet Drainage Panel with Polymeric Film: Composite subsurface drainage panel consisting of a studded, nonbiodegradable, molded-plastic-sheet drainage core; with a nonwoven, needle-punched geotextile facing with an apparent opening size not exceeding No. 70 (0.21-mm) sieve laminated to one side of the core and a polymeric film bonded to the other side; and with a vertical flow rate through the core of [9 to 21 gpm per ft. (112 to 261 L/min. per m)].

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrates for waterproofing application.

B. Mask off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.

C. Close off deck drains and other deck penetrations to prevent spillage and migration of waterproofing fluids.

D. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, acid residues, and other penetrating contaminants or film-forming coatings from concrete.

E. Remove fins, ridges, and other projections, and fill honeycomb, aggregate pockets, holes, and other voids.

F. Prepare surfaces at terminations and penetrations through waterproofing and at expansion joints, drains, sleeves, and corners according to waterproofing manufacturer's written instructions and to recommendations in ASTM C898/C898M.

G. Apply waterproofing in two separate applications, and embed a joint reinforcing strip in the first preparation coat when recommended by waterproofing manufacturer.

H. Prepare, treat, rout, and fill joints and cracks in substrate according to waterproofing manufacturer's written instructions and to recommendations in ASTM C898/C898M. Before coating surfaces, remove dust and dirt from joints and cracks according to ASTM D4258.

I. Install sheet flashing and bond to deck and wall substrates where required according to waterproofing manufacturer's written instructions.

3.2 WATERPROOFING APPLICATION

A. Apply waterproofing according to manufacturer's written instructions and to recommendations in ASTM C898/C898M.

B. Unreinforced Waterproofing Applications.

1. Apply one or more coats of waterproofing to obtain a seamless membrane free of entrapped gases and pinholes, with a dry film thickness of 60 mils (1.5 mm).

C. Install protection course with butted joints over waterproofing before starting subsequent construction operations.

1. For horizontal applications, install protection course loose laid over fully cured membrane.
2. For vertical applications, set protection course in nominally cured membrane, which will act as an adhesive. If membrane cures before application of protection course, use adhesive.
3. Molded-sheet drainage panels may be used in place of a separate protection course for vertical applications when approved in writing by waterproofing manufacturer.

3.3 MOLDED-SHEET DRAINAGE PANEL INSTALLATION

A. Place and secure molded-sheet drainage panels, with geotextile facing away from wall or deck substrate, according to manufacturer's written instructions. Use adhesive or another method that does not penetrate waterproofing. Lap edges and ends of geotextile to maintain continuity. Protect installed molded-sheet drainage panels during subsequent construction.

1. For vertical applications, install protection course before installing drainage panels.

3.4 PROTECTION

A. Do not permit foot or vehicular traffic on unprotected membrane.

B. Protect waterproofing from damage and wear during remainder of construction period.

C. Correct deficiencies in or remove waterproofing that does not comply with requirements; repair substrates, reapply waterproofing, and repair sheet flashings.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. Provide labor, material, equipment and services to furnish and install building insulation as shown on the drawings, as specified herein and as required for a complete and proper installation, including, but not limited to, the following:

1. Thermal Insulation

2. Acoustic Insulation

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Product Data: Furnish manufacturer's literature for each type of insulation.

1. Submit Underwriter's Laboratory approval numbers for required fire ratings; approvals of other laboratories contingent upon acceptance of applicable authorities.

C. Certificates: Stating the type, thickness and "R" value (thermal resistance) of the insulation to be installed.

1.04 STORAGE AND HANDLING

A. Store insulation materials in weathertight enclosure.

B. Protect insulation from damage from handling, weather and construction operations before, during, and after installation.

1.05 APPLICABLE STANDARDS: The latest edition of publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.

A. Federal Specifications (Fed. Spec.)

FF N 105B (3) Nails, Brads, Staples and Spikes: Wire, Cut and Wrought

B. California Building Codes (CBC) 2019 Energy Codes

C. American Society for Testing and Materials (ASTM):

C552 Cellular Glass Block and Pipe Thermal Insulation

C553 Mineral Fiber Blanket and Felt Insulation (Industrial Type)

C578 Preformed Cellular Polystyrene Thermal Insulation

C591 Unfaced Preformed Rigid Cellular Polyurethane Thermal Insulation

C612 Mineral Fiber Block and Board Thermal Insulation

C665 Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing

C728 Perlite Thermal Insulation Board

C954 Steel Drill Screws for the Application of Gypsum Board or Metal Plaster Base to Steel Studs From 0.033 inch to 0.112 inch in thickness

C1002 Steel Drill Screws for the Application of Gypsum Board

PART 2 PRODUCTS

2.01 MATERIALS

A. Thermal Batt Insulation: Thermafiber SAFB, preformed slag mineral or glass fiber with thermosetting resin binders, conforming to ASTM C665, Type 1, HH-I-521F, unfaced; formaldehyde-free and with no toxic materials. Flame Spread/Smoke Density Rating: Maximum 0/0, ASTM E84. Combustibility: Pass ASTM E136.

B. Acoustical Insulation

1. Mineral Fiber Batt or Blankets: ASTM C665, Type 1. Thickness as shown; of widths and lengths to fit tight against framing.

C. Rigid Insulation

1. On the inside face of exterior walls.

2. Cellular Glass Block, ASTM C552, Type 1.

D. Accessories: Furnish as recommended by insulation manufacturer for insulation types, substrates, and conditions involved.

E. Aerogel.

1. Flexible gel filled blanket material: ASTM C1728, Type III, Grade 1A, 10 mm (0.4 in) thick, shown; of widths and lengths to fit tight against framing. Products similar to Pryrogel HPS.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify substrate and adjacent materials are dry and ready to receive insulation; beginning installation signifies acceptance of conditions.

B. Ensure mechanical and electrical items affecting work are properly placed, complete, and have been inspected by Architect prior to commencement of installation.

3.02 INSTALLATION

A. Install batt or blanket insulation with tight joints and filling framing void completely. Seal cuts, tears, and un-lapped joints with tape.

B. Fit insulation tight against adjoining construction and penetrations, unless specified otherwise. Install insulation in accordance with manufacturer's instructions.

C. Cut and trim insulation neatly, to fit spaces.

D. Fit insulation tight within spaces and tight to and behind mechanical and electrical services within insulation plane; leave no gaps or voids; maintain integrity of thermal barrier.

E. Friction fit batt insulation in place; use tape or penetration supports as necessary to assure permanent installation.

F. Fasten blanket insulation between metal studs and wall furring with continuous pressure sensitive tape along edges or adhesive.

G. Pack insulation around door frames and windows and in cracks, expansion joints, control joints, door soffits and other voids. Pack behind outlets, around pipes, ducts, and services encased in wall or partition. Hold insulation in place with pressure sensitive tape or adhesive.

H. Do not compress insulation below required thickness except where embedded items prevent required thickness.

END OF SECTION

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PART 1 - GENERAL

1.01 DESCRIPTION

A. Roof and deck insulation on new construction ready to receive roofing or waterproofing membrane over wood deck.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only. Editions of applicable publications current on date of issue of bidding documents apply unless otherwise indicated.

B. American Society of Heating, Refrigeration and Air Conditioning (ASHRAE):

90.1-07 ..... Energy Standard for Buildings Except Low-Rise Residential Buildings

C. ASTM International (ASTM):

C208-08 ..... Cellulosic Fiber Insulating Board
C552-07 ..... Cellular Glass Thermal Insulation
C726-05 ..... Mineral Fiber Roof Insulation Board
C728-05 ..... Perlite Thermal Insulation Board
C1177/C1177M-08 ..... Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing
C1278/C1278M-07 ..... Standard Specification for Fiber-Reinforced Gypsum Panel
C1289-10 ..... Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
C1396/C1396M-09 ..... Standard Specification for Gypsum Board
D41-05 ..... Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing
D312-06 ..... Asphalt Used in Roofing

D1970-09 .....Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
D2178-04 .....Asphalt Glass Felt Used in Roofing and Waterproofing
D2822-05 .....Asphalt Roof Cement
D4586-07 .....Standard Specification for Asphalt Roof Cement, Asbestos-Free
E84-09.....Standard Test Method for Surface Burning Characteristics of Building Material
F1667-05.....Driven Fasteners: Nails, Spikes, and Staples

D. FM Approvals: RoofNav Approved Roofing Assemblies and Products.

4450-89 .....Approved Standard for Class 1 Insulated Steel Deck Roofs
4470-10 .....Approved Standard for Class 1 Roof Coverings
1-28-09.....Loss Prevention Data Sheet: Design Wind Loads.
1-29-09.....Loss Prevention Data Sheet: Above-Deck Roof Components
1-49-09.....Loss Prevention Data Sheet: Perimeter Flashing

E. National Roofing Contractors Association: Roofing and Waterproofing Manual

F. U.S. Department of Agriculture (USDA): USDA BioPreferred Catalog, www.biopreferred.gov

G. Underwriters Laboratories, Inc. (UL): Fire Resistance Directory (2009)

H. U.S. Department of Commerce National Institute of Standards and Technology (NIST):

DOC PS 1-09 .....U.S. Product Standard for Construction and Industrial Plywood
DOC PS 2-04 .....Performance Standard for Wood-Based Structural-Use Panels.

1.04 PERFORMANCE REQUIREMENTS

A. Thermal Performance: Provide roof insulation meeting minimum overall average R-value of 33 (6 inches).

B. FM Approvals: Provide roof insulation complying with requirements in FM Approvals 4450 and 4470 as part of specified roofing system, listed in FM Approvals "RoofNav" as part of roofing system meeting Fire/Windstorm Classification in Division 07 roofing section.

1.05 QUALITY CONTROL

A. Requirements of Division 07 roofing section for qualifications of roofing system insulation Installer; Work of this Section shall be performed by same Installer.

B. Requirements of Division 07 roofing section for inspection of Work of this Section and qualifications of Inspector.

C. Unless specified otherwise, comply with the recommendations of the NRCA "Roofing and Waterproofing Manual" applicable to insulation for storage, handling, and application.

D. Requirements of roofing system uplift pressure design for specified roofing system.

E. Requirements of applicable FM Approval for specified roofing system insulation attachment.

G. Bio-Based Materials: Where applicable, provide products designated by USDA and meeting or exceeding USDA recommendations for bio-based content, and products meeting Rapidly Renewable Materials and certified sustainable wood content definitions; refer to www.biopreferred.gov.

1.06 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Product Data:

1. Asphalt and adhesive materials, each type.

2. Roofing cement, each type.

3. Roof insulation, each type.

4. Fastening requirements.

C. Federal Sustainable Design Submittals:

1. Product Data for Federally-Mandated Bio-Based Materials: For roof materials, indicating USDA designation and compliance with definitions for bio-based products, Rapidly Renewable Materials, and certified sustainable wood content.

D. Shop Drawings: Include plans, sections, details, and attachments.

1. Nailers, cants, and terminations.

2. Layout of insulation showing slopes, tapers, penetration, and edge conditions.

E. Samples:

1. Roof insulation, each type.

2. Nails and fasteners, each type.

F. Certificates:

1. Indicating type, thermal conductance, and minimum and average thickness of insulation.

2. Indicating materials and method of application of insulation system meet the requirements of FM Approvals for specified roofing system.

G. Laboratory Test Reports: Thermal values of insulation products.

H. Layout of tapered roof system showing units required.

I. Documentation of supervisors' and inspectors' qualifications.

1.07 DELIVERY, STORAGE AND MARKING

A. Comply with the recommendations of the NRCA "Roofing and Waterproofing Manual" applicable to built-up roofing for storage, handling and installation requirements.

1.08 QUALITY ASSURANCE:

A. Roof insulation on combustible or steel decks shall have a flame spread rating not greater than 75 and a smoke developed rating not greater than 150, exclusive of covering, when tested in accordance with ASTM E84, or shall have successfully passed FM Approvals 4450.

1. Insulation bearing the UL label and listed in the UL Building Materials Directory as meeting the flame spread and smoke developed ratings will be accepted in-lieu-of copies of test reports.

2. Compliance with flame spread and smoke developed ratings will not be required when insulation has been tested as part of a roof construction assembly of the particular type used for this project and the construction is listed as fire-classified in the UL Building Materials Directory or listed as Class I roof deck construction in the FM Approvals "RoofNav."

3. Insulation tested as part of a roof construction assembly shall bear UL or FM labels attesting to the ratings specified herein.

PART 2 - PRODUCTS

2.01 ADHESIVE MATERIALS

A. Adhesive Materials, General: Adhesive and sealant materials recommended by roofing system manufacturer for intended use, identical to materials utilized in approved listed roofing system, and compatible with roofing membrane.

1. Liquid-type adhesive materials shall comply with VOC limits of authorities having jurisdiction.

2. Adhesives and sealants that are not on the exterior side of weather barrier shall comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):

a. Plastic Foam Adhesives: 50 g/L.

b. Multipurpose Construction Adhesives: 70 g/L.

c. Fiberglass Adhesives: 80 g/L.

d. Contact Adhesives: 80 g/L.

e. Other Adhesives: 250 g/L.

f. Non-membrane Roof Sealants: 300 g/L.

g. Sealant Primers for Non-porous Substrates: 250 g/L.

h. Sealant Primers for Porous Substrates: 775 g/L.

B. Primer: ASTM D41.

C. Asphalt: ASTM D312, Type III or IV for vapor retarders and insulation.

D. Modified Asphaltic Insulation Adhesive: Insulation manufacturer's recommended modified asphaltic, asbestos-free, cold-applied adhesive formulated to attach roof insulation to substrate or to another insulation layer.

E. Bead-Applied Urethane Insulation Adhesive: Insulation manufacturer's recommended bead-applied, low-rise, one- or multicomponent urethane adhesive formulated to attach roof insulation to substrate or to another insulation layer.

F. Full-Spread Applied Urethane Insulation Adhesive: Insulation manufacturer's recommended spray-applied, low-rise, two-component urethane adhesive formulated to attach roof insulation to substrate or to another insulation layer.

G. Roof Cement: Asbestos free, ASTM D2822, Type I or Type II, ; or, D4586, Type I or Type II.

2.02 ROOF AND DECK INSULATION

A. Roof and Deck Insulation, General: Preformed roof insulation boards approved by roofing manufacturer and listed as component of FM Approvals-approved roofing system.

B. Polyisocyanurate Board Insulation: ASTM C1289, Type II, Class 1, Grade 2, felt or glass-fiber mat facer on both major surfaces.

C. Cellular Glass Board Insulation: ASTM C552, Type IV, kraft-paper sheet faced.

D. Perlite Board Insulation: ASTM C728, expanded perlite, cellulosic fibers, binders, and waterproofing agents with top surface seal coated.

E. Cellulosic Fiber Board Insulation: ASTM C208, Type II, Grade 1 for built-up asphalt or modified bitumen roofing.

F. Tapered Roof Insulation System:

1. Fabricate of mineral fiberboard, polyisocyanurate, perlite board, or cellular glass. Use only one insulation material for tapered sections. Use only factory-tapered insulation.

2. Cut to provide high and low points with crickets and slopes as shown.

3. Minimum thickness of tapered sections; 38 mm (1-1/2 inch).

4. Minimum slope 1:48 (1/4 inch per 12 inches).

2.03 INSULATION ACCESSORIES

A. Glass (Felt): ASTM D2178, Type VI, heavy duty ply sheet.

B. Cants and Tapered Edge Strips:

1. Wood Cant Strips: Refer to Division 06 Section "Rough Carpentry."

2. Insulation Cant Strips: ASTM C208, Type II, Grade 1, cellulosic-fiber insulation board.

3. Tapered Edge Strips: 1:12 (one inch per foot), from 0 mm (0 inches), 300 mm to 450 mm (12 inches to 18 inches) wide.

a. Cellulosic Fiberboard: ASTM C208.

b. Mineral Fiberboard: ASTM C726.

c. Perlite Board: ASTM C728.

C. Vapor Retarder:

1. Glass-Fiber Felts: ASTM D2178, Type IV, asphalt impregnated.

2. Self-Adhering Sheet Vapor Retarder: ASTM D1970, minimum of 1.0-mm- (40-mil-) thick, polyethylene film laminated to layer of rubberized asphalt adhesive, or 0.76- to 1.0-mm- (30- to 40-mil-) thick, polyethylene film laminated to layer of butyl rubber adhesive; maximum permeance rating of 6 ng/Pa x s x sq. m (0.1 perm).

2.04 FASTENERS

A. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with FM Approvals 4470, designed for fastening substrate board to roof deck.

B. Staples and Nails: ASTM F1667. Type as designated for item anchored and for substrate.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Comply with requirements of Division 07 roofing section.

3.02 PREPARATION

A. Comply with requirements of Division 07 roofing section.

3.03 RIGID INSULATION INSTALLATION

A. Insulation Installation, General:

1. Install roof insulation in accordance with roofing system manufacturer's written instructions.

2. Install roof insulation in accordance with requirements of FM Approval's Listing for specified roofing system.

3. Base Sheet: Where required by roofing system, install one lapped base sheet specified in Division 07 roofing section by mechanically fastening to roofing substrate prior to installation of insulation.

4. Cant Strips: Install preformed insulation cant strips at junctures of roofing system with vertical construction.

B. Insulation Thickness:

1. Thickness of roof insulation shown on drawings is nominal. Actual thickness shall provide the average thermal resistance "R" value of not less than that specified in Performance Requirements Article.

2. When thickness of insulation to be used is more or less than that shown on the drawings, make adjustments in the alignment and location of roof drains, flashing, gravel stops, fascias and similar items at no additional cost to the Government.

3. Where tapered insulation is used, the insulation thickness at high points and roof edges shall be as shown on the drawings; the thickness at the low point (drains) shall be not less than 38 mm (1-1/2 inches).

5. Use not less than two layers of insulation when insulation is 68 mm (2.7 inch) or more in thickness unless specified otherwise. Stagger joints minimum 150 mm (6 inches).

C. Lay insulating units with close joints, in regular courses and with cross joints broken. When laid in more than one layer, break joints of succeeding layers of roof insulation with those in preceding layer.

D. Lay units with long dimension perpendicular to the rolled (longitudinal) direction of the roofing felt.

E. Seal all cut edges at penetrations and at edges against blocking with bitumen or roof cement.

F. Cut to fit tight against blocking or penetrations.

G. Cover all insulation installed on the same day; comply with temporary protection requirements of Division 07 roofing section.

H. Installation Method:

1. Adhered Insulation:

a. Prime substrate as required.

b. Set each layer of insulation firmly in solid mopping of hot asphalt.

c. Set each layer of insulation firmly in ribbons of bead-applied insulation adhesive.

d. Set each layer of insulation firmly in uniform application of full-spread insulation adhesive.

2. Mechanically Fastened Insulation:

a. Fasten insulation in accordance with FM Approval's "RoofNav" requirement in Division 07 roofing section.

b. Fasten insulation to resist uplift pressures specified in Division 07 roofing section.

3. Mechanically Fastened and Adhered Insulation:

a. Fasten first layer of insulation according to "Mechanically Fastened Insulation" requirements.

b. Fasten each subsequent layer of insulation according to "Adhered Insulation" requirements.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. Manufacturer's requirements for the proper design, use, and installation of an Exterior Insulation and Finish System.

1. The scope of this work includes creating EIFS infill panels at exterior precast panel openings with a heavy aggregate finish.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 REFERENCES

A.	ASTM B117	Test Method for Salt Spray (Fog) Testing
B.	ASTM C1135	Test Method for Determining Tensile Adhesion Properties of Structural Sealants
C.	ASTM D968	Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive
D.	ASTM D1037	Standard Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials
E.	ASTM D2247	Practice for Testing Water Resistance of Coatings in 100 Percent Relative Humidity
F.	ASTM D2294	Standard Test Method for Creep Properties of Adhesives in Shear by Tension Loading (Metal-to-Metal).
G.	ASTM D2794	Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
H.	ASTM D3273	Standard Test Method for Resistance to Growth of Mold on the Surface of
I.	ASTM E84	Test Method for Surface Burning Characteristics of Building Materials
J.	ASTM E108	Standard Test Methods for Fire Tests of Roof Coverings
K.	ASTM E119	Standard Test Method for Fire Tests of Building Construction and Materials.
L.	ASTM E330	Test method for Structural Performance by Uniform Static Air Pressure Difference
M.	ASTM E331	Test Method for Water Penetration by Uniform Static Air Pressure Difference

N.	ASTM E695	Method for Measuring Relative Resistance to Impact Loading
O.	ASTM E2134	Standard Test Method for Evaluating the Tensile-Adhesion Performance of an Exterior Insulation and Finish System (EIFS)
P.	ASTM E2430	Standard Specification For Expanded Polystyrene (“EPS”) Thermal Insulation Boards For Use In Exterior Insulation and Finish Systems (“EIFS”)
Q.	ASTM E2485	Standard Test Method for Freeze/Thaw Resistance of Exterior Insulation and Finish Systems (EIFS) and Water Resistive Barrier Coatings
R.	ASTM E2486	Standard Test Method for Impact Resistance of Class PB and PI Exterior Insulation and Finish Systems (EIFS)
S.	ASTM G155/ G153	Accelerated Weathering for Exposure of Nonmetallic Materials
T.	Fed. Spec. TT-C-555B	Coating,Textured (For Interior and Exterior Masonry Surfaces)
U.	MIL STD 810B	Military Standard, Environmental Test Methods
V.	NFPA 259	Test Method for Potential Heat of Building Materials
W.	NFPA 268	Standard Test Method for Determining Ignitability of Exterior Wall Assemblies Using a Radiant Heat Energy Source
X.	NFPA 285	Standard Method of Test for the Evaluation of Flammability characteristics of Exterior Nonload-bearing Wall Assemblies Containing Combustible Components Using the Intermediate-scale, Multistory Test Apparatus

1.04 SUBMITTALS

A. Submit Samples, Evaluation Reports, warranties and Certificates.

1.05 QUALITY ASSURANCE

A. Qualifications

1. All EIFS assembly materials must be manufactured or sold by a single-source manufacturer.

2. Applicator:

a. Must process a current manufacture’s certificate of education

b. Must be experienced and competent in installation of plaster-like materials

1.06 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials in original packaging with manufacturer’s identification

B. Storage: Store materials in a cool, dry location, out of sunlight, protected from weather and other harmful environment, and at a temperature above 40°F (4°C) and below 110°F (43°C) in accordance with manufacturer's instructions.

1.07 SITE CONDITIONS

A. Installation Ambient Air Temperature: Minimum of 40°F (4°C) and rising, and remain so for 24 hours thereafter.

B. Substrate Temperature: Do not apply materials to substrates whose temperature are below 40°F (4°C) or contain frost or ice.

C. Inclement Weather: Do not apply materials during inclement weather unless appropriate protection is employed.

D. Sunlight Exposure: Avoid, when possible, installation of the materials in direct sunlight. Application of Acrylic Finishes in direct sunlight in hot weather may adversely affect aesthetics.

E. Materials shall not be applied if ambient temperature exceeds 120°F (49°C) or falls below 40°F (4°C) within 24 hours of application. Protect materials from uneven and excessive evaporation during hot, dry weather.

F. Prior to installation, the substrate shall be inspected for surface contamination, or other defects that may adversely affect the performance of the materials and shall be free of residual moisture.

1.08 WARRANTY

A. Warranty: Manufacturer’s 5 Year Warranty.

PART 2 PRODUCTS

2.01 MATERIALS

A. Manufacturer, Basis of Design: Parex USA, Inc.

2.02 MATERIALS

A. Adhesives:

1. Parex 302 ABC-N1 Base Coat & Adhesive: 100% acrylic polymer base, ready to use, applied without the addition of cement.

B. Insulation Board: In compliance with manufacturer’s requirments for Standard System EIFS.

1. Produced and labeled under a third party quality program as required by applicable building code; and produced by a manufacturer approved by Parex USA.

2. Shall conform to ASTM C578 and ASTM E2430, Type I and the Parex USA specification for Molded Expanded Polystyrene Insulation board.

3. Maximum size shall be 2 ft x 4 ft (610 mm x 1219 mm).

4. Thickness: 3/4 in, minimum (19 mm) after rasping.

C. Base Coats:

1. 302 ABC-N1 Base Coat & Adhesive: 100% acrylic polymer base, ready to use, applied without the addition of cement.

D. Reinforcing Mesh:

1. 358.10 Intermediate Impact 10 Mesh: Wight 12 oz per sq. yd. (407 g/sq m) Reinforcing mesh used with a Standard Sustem, to achieve ASTM E2486 intermediate impact strength.

2. 356 Short Detail Mesh: Reinforcing mesh used for backwrapping and details.

E. Primer:

1. Parex USA Primer: 100% acrylic based coating to prepare surfaces for acrylic or elastomeric finishes.

2. Variance VariPrime Sanded: 100% acrylic based coating to prepare surface for exposed aggregate specialty finishes

F. Finish:

1. Parex USA Variance. Acrylic-based specialty finish. Finish type, texture, and color per Section 09 06 00 Schedules for Finishes.

2. Parex USA Clear Sealer: 100% acrylic, transparent, permeable, dirt resistant sealter for use as a protective coating over acrylic finishes. Use 600 Clear or Matte Clear.

a. Variance Antiquing Gel: a water-based, tinted, semi-transparent, acrylic emulsion for staining, sealing, and protecting concrete, masonry and other cementitious substrates. Use as required to achieve desired finish.

3. Parex USA Clear Sealer: 100% acrylic, transparent, permeable, dirt resistant sealer for use as a protective coating over acrylic finishes. Use 600 Clear or 610 Matte Clear.

G. Portland Cement: ASTM C150, Type I or Type I-II.

H. Water: Clean, cool, potable water.

2.03 RELATED MATERIALS AND ACCESSORIES

A. Substrate Material: Concrete

B. Sealant System:

1. Sealant for expansion joints between panelized EIFS sections shall be ultra-low modulus designed for minimum 100% elongation and minimum 50% compression and as selected by Project Designer.

2. Sealant for perimeter seals around window and door frames and other wall penetrations shall be low modulus, designed for minimum 50% elongation and minimum 25% compression, and as selected by Project Designer.

3. Sealants shall conform to ASTM C 920, Grade NS.

4. Expansion joints between sections of EIFS shall have a minimum width of 3/4 in (19 mm).

5. Perimeter seal joints shall be a minimum width of 1/2 in (12.7 mm).

6. Sealant backer rod shall be closed-cell polyethylene foam.

7. Apply sealant to tracks or base coat of EIFS.

8. Refer to EIFS manufacturer's current bulletin for listing of sealants which have been tested and have been found to be compatible with EIFS materials.

9. Joint design, surface preparation, and sealant primer shall be based on sealant manufacturer's recommendations and project conditions.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify project site conditions.

B. Compliance: Comply with manufacturer's instructions for installation.

C. Substrate Examination: Examine prior to installation of EIFS assembly materials as follows:

1. Substrate shall be examined for soundness, and other harmful conditions.

2. Substrate shall be free of dust, dirt, laitance, efflorescence, and other harmful contaminants.

D. Sealants and Backer Rod: To be installed, where required, in accordance with the sealant manufacturer's specifications and published literature, and using the sealant manufacturers recommended primers.

E. Advise Contractor of discrepancies preventing proper installation of the EIFS materials. Do not proceed with the work until unsatisfactory conditions are corrected.

3.02 PREPARATION

A. Protection: Protect surrounding material surfaces and areas during installation of system.

B. Clean surfaces thoroughly prior to installation.

C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 MIXING

A. Mix materials in accordance with manufacturer's instructions.

3.04 APPLICATION

A. General: Installation shall conform to this specification and manufacturer's written instructions.

B. Insulation Board:

1. Install back-wrap mesh or edge-wrap mesh at system terminations.

2. Apply EIFS adhesive to backs of insulation boards with a notched trowel, with ribbons of adhesive oriented in a vertical direction (parallel to the 2 ft (61 mm) dimension of the EPS board).

3. Install insulation board without gaps in a running bond pattern and interlocked at corners.

4. Rasp irregularities off insulation board after adhesive has dried a minimum of 24 hours.

C. Apply base coat and fully embed mesh in base coat; include diagonal mesh patches at corners of openings and reinforcing mesh patches at joints of track sections. Apply multiple layers of base coat and mesh where required for specified impact resistance classification.

D. Apply primer to base coat after drying. Primer may be omitted if it is not required by the manufacturer's product data sheets for the specified finish coat or otherwise specified for the project.

E. Finish Coat: Apply finish coat to match specified finish type, texture, and color. Do not apply finish coat to surfaces to receive sealant. Keep finish out of sealant joint gaps.

3.05 CLEAN-UP

A. Removal: Remove and legally dispose of EIFS materials from job site.

B. Clean surfaces and work area of foreign materials resulting from material installation.

3.06 PROTECTION

A. Provide protection of installed materials from water infiltration into or behind them.

B. Provide protection of installed materials from dust, dirt, precipitation, and freezing during installation, and continuous high humidity until fully cured and dry.

C. Clean exposed surfaces using materials and methods recommended by the manufacturer of the material or product being cleaned. Remove and replace work that cannot be cleaned to the satisfaction of the Project Designer/Owner.

END OF SECTION 07 24 00

PART 1 GENERAL

1.01 SUMMARY

A. Vapor retarder under concrete slabs on grade.

1.02 RELATED SECTIONS

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Product Data: Submit for vapor retarder sheet and installation accessories. Include data from tests performed within 18 months of submittal showing compliance with specified standard.

C. Shop Drawings: Show extent of vapor retarder work. Include details for edges at walls, grade beams, and the like. Include details for penetrating elements including conduit, piping, and structural membranes.

PART 2 PRODUCTS

2.01 VAPOR RETARDER

A. Plastic Sheet Vapor Retarder: Meeting ASTM E 1745, Class A. Minimum 15 mil thick polyolefin sheet.

Acceptable types include:

1. Stego Wrap by Stego Industries
2. Moistop Ultra A by Fortifiber Corp
3. VaporBlock 15 by Raven Industries
4. Perminator by W.R. Meadows

B. Accessory Products

1. Provide manufacturer’s recommended self-adhesive plastic seam tape for seams and penetrations.
2. Penetration boots: Provide manufacturer’s recommended accessory system for sealing pipe and conduit penetrations.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surface to receive vapor retarder is compacted and trimmed smooth.

B. Verify that all work that will penetrate vapor retarder is complete and rigidly installed.

C. Confirm locations and details of vapor retarder termination.

3.02 VAPOR RETARDER INSTALLATION

A. General: Comply with requirements of ASTM E 1643 and manufacturer's published instructions.

B. Place plastic sheet vapor retarder directly on compacted granular fill. Place sheeting with longest dimension parallel with direction of pour.

C. Lap joints 6 inches and seal with per manufacturer's recommendations with pressure sensitive tape.

D. Tape seal vapor retarder at all perimeters.

E. Tape seal vapor retarder around columns, pipe, and conduit penetrations.

F. Avoid cutting or puncturing vapor retarder/barrier during reinforcement placement and concreting operations. Repair damages before placing concrete.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Provide materials and accessories as required for complete installation.

1. Surface preparation.

2. Application of liquid applied vapor permeable air barrier. May be referred to weather resistive barrier on Drawings.

3. Application of materials to provide bridge and seal air leakage pathways in

a. Wall and roof connections and penetrations.

b. Walls, windows, louvers or doors

c. All other penetrations through the wall assembly.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 REFERENCES

A. ASTM D412-98a(2002)e1 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension.

B. ASTM E96-00e1 (Method B) - Standard Test Methods for Water Vapor Transmission of Materials.

C. ASTM E283-91 (1999) - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.

D. ASTM E783 - Standard Test Method for Field Measurement of Air Leakage through Installed Exterior Windows and Doors.

E. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform or Cyclic Static Air Pressure Difference.

F. ASTM E2178-01 - Standard Test Method for Air Permeance of Building Materials.

G. ASTM E2357 - 05 Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.

1.04 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Product Data: Furnish manufacturer's literature for each type of insulation.

1. Product Data: Include manufacturer's written instructions for evaluating, preparing, and treating substrate; technical data; and tested physical and performance properties of air barrier.

2. Shop Drawings: Show locations and extent of air barrier. Include details for substrate joints and cracks, counterflashing strip, penetrations, inside and outside corners, terminations, and tie-ins with adjoining construction. Include details of interfaces with other materials that form part of air barrier.

3. Use an experienced installer and adequate number of skilled personnel who are thoroughly trained and experienced in the application of the air barrier.

4. Obtain air/vapor barrier materials from a single manufacturer regularly engaged in manufacturing the product.

5. Provide products which comply with all state and local regulations controlling use of volatile organic compounds (VOCs).

1.05 MOCK-UP

A. Before beginning installation of air barrier, build mockups of exterior wall assembly, full height by ten (10) feet wide, including parapet, backup wall construction, external cladding, window, door frame and sill, insulation, and flashing to demonstrate surface preparation, crack and joint treatment, and sealing of gaps, terminations, and penetrations of air barrier membrane.

1. Coordinate construction of mockup to permit inspection of air barrier before external insulation and cladding is installed.

2. Reconstruct mockups do not comply with requirements.

3. Approved mockups may become part of the completed.

4. Include installers of other construction connecting to air barrier, including roofing, waterproofing, composite metal wall panels, metal wall panels, sealants, windows, glazed curtain walls, and door frames.

5. Review air barrier requirements including surface preparation, substrate condition and pretreatment, minimum substrate curing period, forecasted weather conditions, special details and sheet flashings, mockups, installation

procedures, sequence of installation, testing and inspecting procedures, and protection and repairs.

1.06 DELIVERY, STORAGE AND HANDLING

A. Store liquid materials in their original undamaged packages in a clean, dry, protected location and within temperature range required by air barrier manufacturer.

B. Store at temperatures at or above 40°F (4°C), free from contact with cold or frozen surfaces.

C. Remove and replace liquid materials that cannot be applied within their stated shelf life.

D. Protect stored materials from direct sunlight.

E. Protect materials during handling and application to prevent damage or contamination.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Product not intended for uses subject to abuse or permanent exposure to the elements.

B. Do not proceed with product application if rainfall is forecast or imminent within 12 hours.

C. Do not apply membrane when air or surface temperatures are below 40°F (4°C).

D. Do not apply when air, material and surface temperatures are expected to fall below 32° F (0° C) within 24 hours of completed application.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Carlisle

B. Grace

C. Henry

D. Rubber Polymer Corporation

E. Tremco

F. W.R. Meadows

2.02 FLUID-APPLIED MEMBRANE AIR BARRIER

A. Fluid-Applied, Vapor Impermeable Membrane Air Barrier: Two-component, self-curing synthetic-rubber-based membrane, free of solvents, isocyanates and bitumen, suitable for spray application to wet film and dry film thickness of 60 mils.

B. Basis-of-Design Product: Products specified to establish required level of performance, quality, and appearance are by Grace Construction Products, Perm-A-Barrier.

2.03 AUXILIARY MATERIALS

A. General: Auxiliary materials recommended by air barrier manufacturer for intended use and compatible with air barrier membrane. Liquid-type auxiliary materials shall comply with VOC limits.

B. Transition Membrane Primer: Grace Construction Products; "Perm-A-Barrier WB Primer." Liquid primer recommended for substrate by manufacturer of air barrier material when applying flashing and transition membranes directly to substrate.

C. Flashing and Transition Membrane: Grace Construction Products; "Perm-A-Barrier Wall Flashing."Modified bituminous, 40-mil thick, self-adhering sheet consisting of 32 mils of rubberized asphalt laminated to an 8-mil thick, cross-laminated polyethylene film with release liner backing.

D. Modified Bituminous Transition Membrane: Grace Construction Products; "Perm-A-Barrier Detail Membrane." Vapor-retarding, 40-mil- thick, smooth-surfaced, self-adhering; consisting of 36 mils of rubberized asphalt laminated to a 4-mil-thick polyethylene film with release liner backing.

E. Joint Reinforcing Strip: Sheathing manufacturer's glass-fiber-mesh tape.

F. Substrate Patching Membrane: Manufacturer's standard trowel-grade single component substrate filler.

G. Adhesive and Tape: Air barrier manufacturer's standard adhesive and pressure-sensitive adhesive tape.

H. Stainless-Steel Sheet: ASTM A 240/A 240M, Type 304, 0.0250-inch-thick, and Series 300 stainless-steel fasteners.

I. Sprayed Polyurethane Foam Sealant: 1- or 2-component, foamed-in-place, polyurethane foam sealant, 1.5 to 2.0 lb/cu. ft. density; flame spread index of 25 or less according to ASTM E 162; with primer and noncorrosive substrate cleaner recommended by foam sealant manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine surfaces to receive membrane. Notify Architect if surfaces are not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected.

B. Verify that substrates are sound and free of oil, grease, dirt, excess mortar, or other contaminants.

C. Verify that sheathing is attached with proper fasteners and spacing.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 SURFACE PREPARATION

A. Protect adjacent surfaces not designated to receive air barrier.

B. Clean and prepare surfaces to receive air barrier membrane in accordance with manufacturer's instructions.

C. Do not apply membrane to surfaces unacceptable to manufacturer.

D. Patch all holes and voids and smooth out any surface misalignments.

E. Insure joints between dissimilar building materials are sealed with a strip of self-adhesive membrane 10" wide minimum, centered over the joint.

F. Exterior Sheathing Panels:

1. Panels are to be fastened according to sheathing panel manufacturer.

2. Fill all panel joint with detailing compound prior to full application.

3. Gypsum Sheathing: Fill joints greater than 1/4 inch with sealant according to ASTM C 1193 and with air barrier manufacturer's written instructions. Apply first layer of fluid air barrier membrane at joints. Tape joints with joint reinforcing strip after first layer is dry. Apply a second layer of fluid air barrier membrane over joint reinforcing strip.

G. Cover gaps in substrate plane and form a smooth transition from one substrate plane to another with stainless-steel sheet mechanically fastened to structural framing to provide continuous support for air barrier.

3.03 TRANSITION MEMBRANE INSTALLATION

A. Install strips, transition membrane, and auxiliary materials according to air barrier manufacturer's written instructions to form a seal with adjacent construction and maintain a continuous air barrier.

B. Coordinate the installation of air barrier with installation of roofing membrane and base flashing to ensure continuity of air barrier with roofing membrane.

C. Install modified bituminous transition membrane on roofing membrane or base flashing so that a minimum of 3 inches of coverage is achieved over both substrates.

D. Apply primer to substrates at required rate and allow to dry. Limit priming to areas that will be covered by air barrier sheet in same day. Re-prime areas exposed for more than 24 hours.

E. Prime glass-fiber-surfaced gypsum sheathing with number of prime coats needed to achieve required bond, with adequate drying time between coats.

F. Connect and seal exterior wall air barrier membrane continuously to roofing membrane air barrier, floor-to floor construction, exterior glazing and window systems, glazed curtain-wall systems, storefront systems, exterior louvers, exterior door framing, and other construction used in exterior wall openings.

G. At end of each working day, seal top edge of strips and transition membranes to substrate with termination mastic.

H. Apply joint sealants forming part of air barrier assembly within manufacturer's recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

I. Wall Openings: Prime concealed perimeter frame surfaces of windows, curtain walls, storefronts, doors and louvers. Apply modified bituminous transition membrane so that a minimum of 6 inches of coverage is achieved over both substrates. Maintain 6 inches of full contact over firm bearing to perimeter frames with not less than 2 inches of full contact.

J. Modified Bituminous Transition Membrane: Roll firmly to enhance adhesion.

K. Preformed Silicone-Sealant Extrusion: Set in full bed of silicone sealant applied to walls, frame, and membrane.

L. Fill gaps in perimeter frame surfaces of windows, curtain walls, storefronts, and doors, and miscellaneous penetrations of air barrier membrane with foam sealant.

M. Seal exposed edges of strips at seams, cuts, penetrations, and terminations not concealed by metal counter-flashings or ending in reglets with termination mastic.

N. Repair punctures, voids, and deficient lapped seams in strips and transition membranes. Slit and flatten fish-mouths and blisters. Patch with transition membranes extending 10 inches beyond repaired areas in membrane direction.

3.04 AIR BARRIER MEMBRANE INSTALLATION

A. Apply air barrier membrane to form a seal with strips and transition membranes and to achieve a continuous air barrier according to air barrier manufacturer's written instructions.

B. Apply air barrier at walls, soffits and fascia to roof barrier.

C. Apply within manufacturer's recommended application temperature ranges.

D. Apply primer to substrates at required rate and allow to dry. Limit priming to areas that will be covered by air barrier sheet in same day. Re-prime areas exposed for more than 24 hours.

E. Prime glass-fiber-surfaced gypsum sheathing with number of prime coats needed to achieve required bond, with adequate drying time between coats.

F. Apply a continuous unbroken air barrier to substrates according to the following minimum thickness. Apply membrane in full contact around protrusions.

G. Vapor-Impermeable Membrane Air Barrier: 60-mil wet film thickness, 60-mil dry film thickness.

H. Apply strip and transition membrane overlapping or onto according to air barrier manufacturer's written instructions.

I. Do not cover air barrier until it has been tested and inspected by testing agency.

J. Correct deficiencies in or remove air barrier that does not comply with requirements; repair substrates and reapply air barrier components.

3.05 CLEANING AND PROTECTION

A. Protect air barrier system from damage during application.

B. Protect air barrier from exposure to UV light and harmful weather exposure as required by manufacturer. Remove and replace vapor-impermeable air barrier exposed for more than 60 days.

C. Keep barrier from contact with creosote, uncured coal-tar products, TPO, EPDM, flexible PVC membranes, and sealants not approved by air barrier manufacturer.

D. Clean spills, stains, and soiling from construction that would be exposed in the completed work using cleaning agents and procedures recommended by manufacturer of affected construction.

E. Remove masking materials after installation.

END OF SECTION

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PART 1 GENERAL

1.01 DESCRIPTION

A. Thermoplastic Polyolefin (TPO) sheet roofing mechanically fastened to roof deck.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only. Editions of applicable publications current on date of issue of bidding documents apply unless otherwise indicated.

B. American National Standards Institute/Single-Ply Roofing Institute (ANSI/SPRI):

ANSI/SPRI ES-1-03 ..... Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.

C. American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI):

ASCE/SEI-7-10 ..... Minimum Design Loads for Buildings and Other Structures

D. ASTM International (ASTM):

C1371-04 ..... Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers

C1549-04 ..... Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer

D6878-08 ..... Standard Specification for Thermoplastic Polyolefin Based Sheet Roofing

E108-10..... Standard Test Methods for Fire Tests of Roof Coverings

E408-71(R2008)..... Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques

E1980-01..... Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field

E 2430 -05. . . . . Rigid Polystyrene Insulation

C 168. . . . . .Test method for Thermal Insulation

C 177. . . . . .Test for Steady State Heat flux Measurements, and Thermal insulation

E. American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE)

ASHRAE 90.1-2007 .....Energy Standard for Buildings Except Low-Rise Residential Buildings, Appendix f.

F. Cool Roof Rating Council:

CRRC-1.....Product Rating Program, www.coolroofs.org

G. FM Approvals: Roof Nav Approved Roofing Assemblies and Products.

1-28-09.....Loss Prevention Data Sheet: Design Wind Loads.

1-29-09.....Loss Prevention Data Sheet: Above-Deck Roof Components

H. National Roofing Contractors Association: Roofing and Waterproofing Manual

I. U.S. Department of Energy (DoE): Roof Products Qualified Product List, www.energystar.gov

1.04 PERFORMANCE REQUIREMENTS

A. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.

B. Roofing System Energy Performance Requirements: Provide a roofing system identical to components that that have been successfully tested by a qualified independent testing and inspecting agency to meet the following requirements:

C. Energy Performance, Energy Star: Provide roofing system that is listed on DOE's ENERGY STAR "Roof Products Qualified Product List" for low-slope roof products. www.energystar.gov.

1. Solar Reflectance Index: Not less than 82 when calculated according to ASTM E1980 based on testing identical products by a qualified testing agency. www.coolroofs.com.

1.05 QUALITY CONTROL

A. Installer Qualifications:

1. Licensed or approved in writing by manufacturer to perform work under warranty requirements of this Section.

2. Employ full-time supervisors knowledgeable and experienced in roofing of similar types and scopes, and able to communicate with owner and workers.

B. Inspector Qualifications: Inspection of work by third-party technical inspector or technical representative of manufacturer experienced in the installation and maintenance of the specified roofing system, qualified to perform roofing observation and inspection specified in Field Quality Control Article, to determine Installer's compliance with the requirements of this Project, and approved by the manufacturer to issue warranty certification. The Roofing Inspector shall be an independent party certified as a Registered Roof Observer by the Roof Consultants Institute (RCI), retained by the Contractor and approved by the Manufacturer

C. Product/Material Requirements:

1. Obtain products from single manufacturer or from sources recommended by manufacturer for use with roofing system and incorporated in manufacturer's warranty.

D. Roofing system design standard requirements:

1. Recommendations of the NRCA "Roofing and Waterproofing Manual" applicable to Thermoplastic Polyolefin (TPO) roofing for storage, handling and application.

2. Recommendations of FM Approvals 1-49 Loss Prevention Data Sheet for Perimeter Flashings.

3. Recommendations of ANSI/SPRI ES-1 for roof edge design.

4. Roofing System Design: Provide roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE/SEI 7.

a. Corner Uplift Pressure: (75 lbf/sq. ft.).

b. Perimeter Uplift Pressure: (75 lbf/sq. ft.).

c. Field-of-Roof Uplift Pressure: (75 lbf/sq. ft.).

5. FM Approvals Listing: Provide roofing membrane, base flashing, and component materials that comply with requirements in FM Approvals 4450 and FM Approvals 4470 as part of a roofing system and that are listed in FM Approvals "RoofNav" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Approvals markings.

a. Fire/Windstorm Classification: Class 1A-75.

b. Hail Resistance: MH.

E. Pre-Roofing Meeting:

1. Prior to roofing, discuss specific expectations and responsibilities, construction procedures, specification requirements, application, environmental conditions, job and surface readiness, material storage, and protection with COR to:

a. Verify that work of other trades which penetrates roof deck is completed.

b. Determine adequacy of deck anchorage, presence of foreign material, moisture and unlevel surfaces, or other conditions that would prevent application of roofing system from commencing or cause a roof failure.

c. Examine samples and installation instructions of manufacturer.

1.06 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, SAMPLES.

B. Product Data:

1. Adhesive materials.

2. Membrane sheet roofing and flashing membrane.

3. Roof Insulation

3. Fastening requirements.

4. Application instructions.

C. Samples:

1. Nails and fasteners, each type.

D. Shop Drawings: Include plans, sections, details, and attachments.

1. Base flashings and terminations.

2. Layout of insulation, crickets, edge conditions and roof drains, scuppers etc.

E. Certificates:

1. Indicating materials and method of application of roofing system meets requirements of FM Approvals "RoofNav" for specified fire/windstorm classification.

2. Indicating compliance with energy performance requirement.

3. Labatory test reports: Thermal values of insulation products.

4. Indicating Thermal conductance, and minimum average thickness of insulation.

F. Warranty: As specified.

G. Documentation of supervisors' and inspectors' qualifications.

H. Field reports of roofing inspector.

I. Contract Close-out Submittals:

1. Maintenance Manuals.

2. Warranty signed by installer and manufacturer.

1.07 DELIVERY, STORAGE AND HANDLING

A. Comply with the recommendations of the NRCA “Roofing and Waterproofing Manual” applicable to single ply membrane roofing for storage, handling and installation.

1.08 ENVIRONMENTAL REQUIREMENTS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.09 WARRANTY

A. Roofing work subject to 10 years.

1.10 QUALITY ASSURANCE:

A. Roof insulation on steel deck shall have a flame spread rating no greater than 75 and a smoke developed rating not greater than 150, exclusive of covering, when tested in accordance with ASTM E 84, or shall have successfully passed FM Approvals 4450.

PART 2 PRODUCTS

2.01 TPO MEMBRANE ROOFING

A. TPO Sheet: ASTM D6878, internally fabric or scrim reinforced, 1.5 mm (60 mils) thick, with no backing.

B. Color: White.

2.02 ACCESSORIES

A. Sheet Flashing: Manufacturer's standard sheet flashing of same material, type, reinforcement, thickness, and color as TPO sheet membrane.

B. Bonding Adhesive: Manufacturer's standard, water based.

C. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 25 by 3 mm (1 by 1/8 inch) thick; with anchors.

D. Metal Battens: Manufacturer's standard, aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 25 mm wide by 1.3 mm (1 inch wide by 0.05 inch) thick, prepunched.

E. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with FM Approvals 4470, designed for fastening membrane to substrate.

G. Miscellaneous Accessories: Provide sealers, preformed flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories acceptable to manufacturer.

H. Roof and Deck Insulation.

2.03 ADHESIVE AND SEALANT MATERIALS

A. General: Adhesive and sealant materials recommended by roofing system manufacturer for intended use, identical to materials utilized in approved listed roofing system, and compatible with roofing membrane.

B. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions with roofing Installer and roofing inspector to verify compliance with project requirements and suitability to accept subsequent roofing work. Correct unsatisfactory conditions before proceeding with roofing work.

B. Do not apply roofing if roof surface will be used for subsequent work platform, storage of materials, or staging or scaffolding will be erected thereon unless system is protected.

3.02 PREPARATION

A. Complete roof deck construction prior to commencing roofing work:

1. Install curbs, blocking, edge strips, nailers, cants, and other components where insulation, roofing, and base flashing is attached to, in place ready to receive insulation and roofing.

2. Complete deck and insulation to provide designed drainage to working roof drains.

3. Document installation of related materials to be concealed prior to installing roofing work.

B. Dry out surfaces, including the flutes of metal deck that become wet from any cause during progress of the work before roofing work is resumed. Apply materials to dry substrates.

C. Sweep decks to broom clean condition. Remove all dust, dirt or debris.

D. Remove projections that might damage materials.

3.04 INSTALLATION, GENERAL

A. FM Approvals Installation Standard: Install roofing membrane, base flashings, wood cants, blocking, curbs, and nailers, and component materials in compliance with requirements in FMG 4450 and FMG 4470 as part of a membrane roofing system as listed in FM Approval's "RoofNav" for fire/windstorm classification indicated. Comply with recommendations in FM Approvals' Loss Prevention Data Sheet 1-49, including requirements for nailers and cants.

B. NRCA Installation Standard: Install roofing system in accordance with applicable NRCA Manual Plates and NRCA recommendations.

C. Manufacturer Recommendations: Comply with roofing system manufacturer's written installation recommendations.

D. Coordination with related work: Coordinate roof operations with roof insulation and sheet metal work so that insulation and flashings are installed concurrently to permit continuous roofing operations.

E. Installation Conditions:

1. Apply dry roofing materials. Apply roofing work over dry substrates and materials.

2. Apply materials within temperature range and surface and ambient conditions recommended by manufacturer.

3. Except for temporary protection, do not apply materials during damp or rainy weather, during excessive wind conditions, nor while moisture (dew, snow, ice, fog or frost) is present in any amount in or on the materials to be covered or installed:

a. Do not apply materials when the temperature is below 4 deg. C (40 deg. F).

b. Do not apply materials to substrate having temperature of 4 deg. C (40 deg. F) or less.

3.05 RIGID INSULATION INSTALLATION

A. Insulation Installation, General:

1. Install roof insulation in accordance with roofing system manufacturer's written instructions.

2. Install roof insulation in accordance with requirements of FM Approval's Listing for specified roofing system.

3. Base Sheet: Where required by roofing system, install one lapped base sheet specified in Division 07 roofing section by mechanically fastening to roofing substrate prior to installation of insulation.

4. Cant Strips: Install preformed insulation cant strips strips at junctures of roofing system with vertical construction.

5. Use same insulation as existing for roof repair and alterations unless specified otherwise.

B. Insulation Thickness:

1. Thickness of roof insulation shown on drawings is nominal. Actual thickness shall provide the average thermal resistance "R" value of not less than that specified in Performance Requirements Article.

2. Insulation on Metal Decks: Provide minimum thickness of insulation for metal decks recommended by the insulation manufacturer to span rib opening (flute size) of metal deck used. Support edges of insulation on metal deck ribs.

3. When thickness of insulation to be used is more or less than that shown on the drawings, make adjustments in the alignment and location of roof drains, flashing, gravel stops, fascias and similar items at no additional cost to the Owner.

4. Where tapered insulation is used, the thickness of the insulation at high points and roof edges shall be as shown on the drawings; the thickness at the low point (drains) shall be not less than 38 mm (1-1/2 inches).

5. Use not less than two layers of insulation when insulation is 68 mm (2.7 inch) or more in thickness unless specified otherwise. Stagger joints minimum 150 mm (6 inches).

C. Lay insulating units with close joints, in regular courses and with cross joints broken. When laid in more than one layer, break joints of succeeding layers of roof insulation with those in preceding layer.

D. Lay units with long dimension perpendicular to the rolled (longitudinal) direction of the roofing felt.

E. Seal all cut edges at penetrations and at edges against blocking with bitumen or roof cement.

F. Cut to fit tight against blocking or penetrations.

G. Cover all insulation installed on the same day; comply with temporary protection requirements of Division 07 roofing section.

3.06 INSTALLATION OF TPO ROOFING

A. Do not allow the membrane to come in contact with surfaces contaminated with asphalt, coal tar, oil, grease, or other substances which are not compatible with TPO.

B. Install the membrane so the sheets run perpendicular to the long dimension of the insulation boards.

C. Commence installation at the low point of the roof and work towards the high point. Lap the sheets so the flow of water is not against the edges of the sheet.

D. Position the membrane so it is free of buckles and wrinkles.

E. Roll sheet out on deck; inspect for defects as being rolled out and remove defective areas. Allow for relaxing before proceeding.

1. Lap edges and ends of sheets 50 mm (two inches) or more as recommended by the manufacturer.

2. Heat weld laps. Apply pressure as required. Seam strength of laps as required by ASTM D4434.

3. Check seams to ensure continuous adhesion and correct defects.

4. Finish edges of laps with a continuous beveled bead of sealant to sheet edges to provide smooth transition.

5. Finish seams as the membrane is being installed (same day).

6. Anchor perimeter to deck or wall as specified.

F. Repair areas of welded seams where samples have been taken or marginal welds, bond voids, or skips occurs.

G. Repair fishmouths and wrinkles by cutting to lay flat and installing patch over cut area extending 100 mm (four-inches) beyond cut.

H. Membrane Perimeter Anchorage:

1. Install metal fastening strip at the perimeter of each roof level, curb flashing, expansion joints and similar penetrations as indicated and in accordance with membrane manufacturer's instructions on top of roof membrane to deck or wall.

2. Mechanically Fastened Metal Fastening Strip:

a. Set top of mechanical fastener set flush with top surface of the metal fastening strip. Space mechanical fasteners a maximum 300 mm (12 inches) on center starting 25 mm (one inch) from the end of the nailing strip.

b. When strips are cut round corners and eliminate sharp corners.

c. After mechanically fastening strip cover and seal strip with a six-inch wide roof membrane strip; heat weld to roof membrane and seal edges.

d. At roof edge metal, turn the membrane down over the front edge of the blocking or the nailer to below blocking. Secure the membrane to the vertical portion of the nailer; or, if required by the membrane manufacturer with fasteners spaced not over 300 mm (12 inches) on centers.

e. At parapet walls, intersecting building walls and curbs, secure the membrane to the structural deck with fasteners 300 mm (12 inches) on centers or as shown on NRCA manual.

I. Mechanically-Attached System:

1. Secure the membrane to the structural deck with fasteners through stress plate or batten strips spaced and patterned in accordance with the membrane manufacturer's instructions to achieve specified wind uplift performance.

2. When fasteners are installed within the laps of adjoining sheets, position the fastener so that the stress plates are a minimum 13 mm (1/2)inch) from the edge of the sheets.

3. Where fasteners are installed over the membrane after the seams have been welded, cover the fasteners with a minimum 175 mm (seven inch) wide round TPO membrane cap centered over the fasteners. If batten strips are used cover the strip with a minimum 175 mm (seven inch) wide TPO strip centered over the

batten. Heat weld to the roof membrane and finish edges with sealant as specified. Finish edges with sealant as specified.

4. Before installing fasteners into cast in place concrete, pre-drill the correct size hole into the deck. Drill the hole 9 mm (3/8 inch) deeper than the fastener penetration.

3.07 INSTALLATION OF FLASHING

A. Install flashings as the membrane is being installed. If the flashing cannot be completely installed in one day, complete the installation until the flashing is in a watertight condition and provide temporary covers or seals.

B. Flashing Roof Drains:

1. Install roof drain flashing as recommended by the membrane manufacturer, generally as follows:

a. Coordinate to set the metal drain flashing in asphalt roof cement, holding cement back from the edge of the metal flange.

b. Do not allow the roof cement to come in contact with the TPO roof membrane.

c. Adhere the TPO roof membrane to the metal flashing with the membrane manufacturer's recommended adhesive.

2. Turn down the metal drain flashing and TPO roof membrane into the drain body and install clamping ring and strainer.

C. Installing TPO Base Flashing and Pipe Flashing:

1. Install TPO flashing membranes to pipes, wall or curbs to a height not less than eight-inches above roof surfaces and 100 mm (four inches) on roof membrane.

a. Adhere flashing to pipe, wall or curb with adhesive.

b. Form inside and outside corners of TPO flashing membrane in accordance with NRCA manual. Form pipe flashing in accordance with NRCA manual use pipe boot.

c. Lap ends not less than 100 mm (four inches).

d. Heat weld flashing membranes together and flashing membranes to roof membranes. Finish exposed edges with sealant as specified.

e. Install flashing membranes in accordance with NRCA manual.

2. Anchor top of flashing to walls or curbs with fasteners spaced not over 200 mm (eight inches) on centers. Use fastening strip on ducts. Use pipe clamps on pipes or other round penetrations.

3. Apply sealant to top edge of flashing.

D. Installing Building Expansion Joints:

1. Install base flashing as shown.

2. Coordinate installation with metal expansion joint cover or roof expansion joint system.

E. Repairs to membrane and flashings:

1. Remove sections of TPO sheet roofing or flashing that is creased wrinkled or fish-mouthed.

2. Cover removed areas, cuts and damaged areas with a patch extending 100 mm (four inches) beyond damaged, cut, or removed area. Heat weld to roof membrane or flashing. Finish edge of lap with sealant as specified.

3.08 FIELD QUALITY CONTROL

A. Roofing Inspector: Contractor will engage a qualified roofing inspector to perform roof tests and inspections and to prepare test reports.

1. Examine and probe seams in the membrane and flashing in the presence of Architect, Owner and Membrane Manufacturer's Inspector.

2. Probe edge of welded seams with a blunt tipped instrument. Use sufficient hand pressure to detect marginal welds, voids, skips, and fish-mouths.

C. Final Roof Inspection:

1. Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.

2. Notify Architect and Owner 7 days in advance of date and time of inspection.

D. Repair or remove and replace components of roofing work where test results or inspections indicate that they do not comply with specified requirements. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.09 PROTECTING AND CLEANING

A. Protect membrane roofing system from damage and wear during remainder of construction period.

B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements; repair substrates; and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of acceptance by Owner.

C. Clean overspray and spillage from adjacent construction. Clean membrane and restore surface to like-new condition meeting solar reflectance requirements.

END OF SECTION

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PART 1 GENERAL

1.01 SUMMARY

A. Provide metal flashings and sheet metal including accessories as required for complete weather tight installation.

B. Patch existing flashing and sheet metal as required by new construction.

C. Provide concealed sealants used in conjunction with installation of metal flashing and sheet metal.

D. Provide miscellaneous sheet metal flashing and reglets not provided by other trades or suppliers.

1. Where reglets are to be installed in conjunction with other work, provide in adequate time for installation.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Product Data: Furnish literature for manufactured products.

C. Shop Drawings: Clearly indicate dimensioning, layout, general construction details including closures, flashings, locations and types of sealants, anchorages, and method of anchorage.

D. Samples: Furnish samples of typical metal flashing fabrication indicating standard soldered joints and edge conditions.

1.04 QUALITY ASSURANCE

A. Referenced Standards

1. California Building Code (CBC), Latest Edition

2. Sheet Metal and Air Conditioning Contractors National Association (SMACNA): Architectural Sheet Metal Manual, Latest Edition

B. Design Requirements: Allow for movement of components without causing buckling, failure of joint seals, undue stress on fasteners or other detrimental effects, when subject to 100-year seasonal temperature ranges.

C. Sheet metal fabricator and installer shall have a minimum five (5) years of experience with shop fabrication and installation of shop-fabricated roofing metal and flashings.

1.05 DELIVERY, STORAGE AND HANDLING

A. Provide strippable film protective covering on shop finished flashing materials to protect materials through shipping, fabrication and installation.

1.06 WARRANTY

A. Special Warranty: Provide for correcting failure of metal flashing system to resist penetration of water and damage from wind.

1. Special Warranty Period: Two years.

PART 2 PRODUCTS

2.01 MATERIALS

A. Flashing and Sheet Metal:

1. Minimum gauge of aluminum per SMACNA. Minimum gauge of gutters, downspouts and roof edge, .040 aluminum, 20ga.

B. Flexible Flashings: Reinforced self- adhered flexible flashing.

C. Solder and Fasteners: As recommended by SMACNA and complying with applicable codes and regulations; hot dipped galvanized minimum coating comparable to G90.

D. Concealed Sealant: Butyl type for use in conjunction with sheet metal; non-staining; non-corrosive; non-shrinking and non-sagging; ultra-violet and ozone resistant for exterior concealed applications.

E. Bituminous Paint: Acid and alkali resistant type; black color; asbestos free.

F. Plastic Cement: Cutback asphaltic type; asbestos free.

G. Sealing Compound: Type recommended by roofing manufacturer; asbestos free.

H. Gaskets: Type suitable for use in conjunction with sheet metal; non-staining, non-corrosive, non-shrinking, non-sagging, ultra-violet resistant, and ozone resistant; for exterior concealed applications.

1. Manufacturers:

a. Sandell Manufacturing Co./Polytite Joint Sealant.

b. Emseal USA, Inc./Emseal Secondary Seal.

2.02 FABRICATION

A. Fabricate sheet metal in accordance with SMACNA Architectural Sheet Metal Manual.

B. Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

C. Fabricate corners and intersections in shop with solder joints; watertight fabrication.

D. Form sections in maximum 10'-0" lengths; make allowance for expansion at joints.

E. Hem exposed edges on underside 1/2".

F. Backpaint flashings with heavy bodied bituminous paint where in contact with cementitious materials or dissimilar metals.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install metal flashing and sheet metal in accordance with SMACNA Architectural Sheet Metal Manual.

1. Install tight in place, with corners square, surfaces true and straight in planes, and lines accurate to profiles as indicated on Drawings.

2. Lap joints in direction of water flow.

3. Install self-adhering flexible flashings and overlap metal flashing joints and adjacent materials in direction of water flow.

B. Exercise care when cutting materials on site, to ensure cuttings do not remain on finished surfaces.

C. Provide expansion joints concealed within system.

D. Use concealed fasteners, continuous cleat type, except where specifically approved by Architect.

1. Exposed fasteners may be used, where clearly indicated on shop drawings and approved by the Owner, at areas not exposed at exterior walls nor in sight of interior spaces.

E. Apply sealing compound at junction of metal flashing and felt flashing.

F. Lock seams and end joints; fit flashing tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.

G. Install flashings with minimum joints and as long of section as possible.

H. Install sealants where required to prevent direct weather penetration.

1. Install continuous gasket behind surface-applied reglets.

I. Completed installation shall be free of rattles, noise due to thermal and air movement, and wind whistles.

J. Install metal flashing at all intersections to protect waterproofing, insulation and gypsum sheathing from UV exposure.

K. Install dam flashing at window, louvers, openings and at intersecting horizontal and vertical surfaces.

3.02 CLEANING

A. Remove protective coating from shop finished sheet metal when no longer required to protect roofing and flashing from construction.

B. Touch-up scratched and damaged finish to match new; remove and replace sheet metal units that cannot be repaired to look identical to adjacent sheet metal when viewed from 5'-0" away.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. This section specifies the following materials and accessories as required for complete weathertight installation:

1. Copings.

1.2 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.3 SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each type of roof specialty and for each color and texture specified.

C. Product Test Reports: For tests performed by a qualified testing agency.

D. Sample warranty.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing specialties to include in maintenance manuals.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer offering products meeting requirements that are FM Approvals listed for specified class.

1.6 WARRANTY

A. Roofing-System Warranty: Roof specialties are included in warranty provisions in Section 07 54 23 - Thermoplastic Polyolefin (TPO) Roofing.

B. Special Warranty on Painted Finishes: Manufacturer agrees to repair finish or replace roof specialties that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Fluoropolymer Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Hunter units when tested according to ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested according to ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. FM Approvals' Listing: Manufacture and install copings that are listed in FM Approvals' "RoofNav" and approved for windstorm classification, Class 1-90 Identify materials with FM Approvals' markings.

B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of thermal movements. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C) material surfaces.

2.2 COPINGS

A. Metal Copings: Manufactured coping system consisting of metal coping cap in section lengths not exceeding 12 feet (3.6 m), concealed anchorage; with corner units, end cap units, and concealed splice plates with finish matching coping caps.

1. Metallic-Coated Steel Sheet Coping Caps: Zinc-coated (galvanized) steel, nominal 0.034-inch (0.86-mm) thickness.

a. Surface: Smooth, flat finish.
b. Finish: Three-coat metallic fluoropolymer.
c. Color: Dark Bronze

2. Corners: Factory mitered and mechanically clinched and sealed watertight.
3. Coping-Cap Attachment Method: Face leg hooked to continuous cleat with back leg fastener exposed, fabricated from coping-cap material.

a. Face-Leg Cleats: Concealed, continuous stainless steel.

2.3 MATERIALS

A. Zinc-Coated (Galvanized) Steel Sheet: ASTM A653/A653M, G90 (Z275) coating designation.

B. Stainless-Steel Sheet: ASTM A240/A240M or ASTM A666, Type 304.

2.4 MISCELLANEOUS MATERIALS

A. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to meet performance requirements, complying with FM Approvals 4470.

B. General: Adhesive and sealant materials recommended by roofing system manufacturer for intended use, identical to materials utilized in approved listed roofing system, and compatible with roofing membrane.

C. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.

2.5 FINISHES

A. Coil-Coated Galvanized-Steel Sheet Finishes:

1. High-Performance Organic Finish: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with ASTM A755/A755M and coating and resin manufacturers' written instructions.

a. Three-Coat Metallic Fluoropolymer: AAMA 621. Fluoropolymer finish with suspended metallic flakes containing not less than 70 percent PVDF resin by weight in both color coat and clear topcoat.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. General: Install roof specialties according to manufacturer's written instructions. Anchor roof specialties securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, underlayments, sealants, and other miscellaneous items as required to complete roof-specialty systems.

1. Install roof specialties level, plumb, true to line and elevation; with limited oil-canning and without warping, jogs in alignment, buckling, or tool marks.
2. Provide uniform, neat seams with minimum exposure of solder and sealant.
3. Install roof specialties to fit substrates and to result in weathertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.
4. Torch cutting of roof specialties is not permitted.
5. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

1. Coat concealed side of stainless-steel roof specialties with bituminous coating where in contact with wood, ferrous metal, or cementitious construction.
2. Bed flanges in thick coat of asphalt roofing cement where required by manufacturers of roof specialties for waterproof performance.

C. Expansion Provisions: Allow for thermal expansion of exposed roof specialties.

1. Space movement joints at a maximum of 12 feet (3.6 m) with no joints within 18 inches (450 mm) of corners or intersections unless otherwise indicated on Drawings.
2. When ambient temperature at time of installation is between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement each way. Adjust setting proportionately for installation at higher ambient temperatures.

D. Fastener Sizes: Use fasteners of sizes that penetrate substrate not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

E. Seal concealed joints with butyl sealant as required by roofing-specialty manufacturer.

F. Seal joints as required for weathertight construction. Place sealant to be completely concealed in joint. Do not install sealants at temperatures below 40 deg F (4 deg C).

3.2 COPING INSTALLATION

A. Install cleats, anchor plates, and other anchoring and attachment accessories and devices with concealed fasteners.

B. Anchor copings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.

1. Interlock face-leg drip edge into continuous cleat anchored to substrate at 16-inch (406-mm) centers. Anchor back leg of coping with screw fasteners and elastomeric washers at 16-inch (406-mm) centers.

3.3 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder and sealants.

C. Remove temporary protective coverings and strippable films as roof specialties are installed.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. Provide labor, material, equipment and services to furnish and install firestopping systems required for the work as shown on the drawings, as specified herein and as required for a complete and proper installation, including, but not limited to, the following:

1. Closures of openings in walls, floors, and roof decks against penetration of flame, heat, and smoke or gases in fire resistant rated construction.

2. Closures of openings in walls against penetration of gases or smoke in smoke partitions.

3. Sealants around penetrations in non-rated smoke barriers where indicated on Drawings.

4. Closures of floor openings in vertical mechanical shafts against penetration of flame, heat, smoke and gases.

B. Drawings and General Provisions of the Contract, including General and Supplementary Conditions, and Division 1 Specification Sections, apply to this Section.

1.02 RELATED SECTIONS

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 SUBMITTALS

A. Submit in accordance with Section 01 33 00 – Submittals.

B. Manufacturers literature, data, and installation instructions for types of firestopping and smoke stopping used.

C. List of FM, UL, or WH classification number of systems installed.

D. Certified laboratory test reports for ASTM E814 tests for systems not listed by FM, UL, or WH proposed for use.

1.04 DELIVERY AND STORAGE

A. Deliver materials in their original unopened containers with manufacturer’s name and product identification.

B. Store in a location providing protection from damage and exposure to the elements.

1.05 QUALITY ASSURANCE

A. FM, UL, or WH or other approved laboratory tested products will be acceptable.

1.06 APPLICABLE STANDARDS: The latest edition of publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.

A. American Society for Testing and Materials (ASTM):

1. E84 Surface Burning Characteristics of Building Materials

2. E136 Behavior of Material in a Vertical Tube Furnace

3. E814 Fire Tests of Through-Penetration Fire Stops

B. Factory Mutual Engineering and Research Corporation (FM):

1. Annual Issue Approval Guide Building Materials

C. Underwriters Laboratories, Inc. (UL):

1. Annual Issue Building Materials Directory

2. Annual Issue Fire Resistance Directory

D. Warnock Hersey (WH):

1. Annual Issue Certification Listings

PART 2 PRODUCTS

2.01 FIRESTOP SYSTEMS

A. Metallic Pipe of Conduits: Firestop systems shall comply with the following:

1. Classified for use with the particular type of penetrating material used.

2. Use either factory built (Firestop Devices) or field erected (through-Penetration Firestop Systems) to form a specific building system maintaining required integrity of the fire barrier and stop the passage of gases or smoke.

3. Tested through-penetration firestop systems and firestop devices in accordance with ASTM E814 using the "T" rating to maintain the same rating and integrity as the fire barrier being sealed.

4. Products requiring heat activation to seal an opening by its intumescence shall exhibit a demonstrated ability to function as designed to maintain the fire barrier.

5. Firestop sealants used for firestopping or smoke sealing shall have following properties:

a. Contain no flammable or toxic solvents.

b. Have no dangerous or flammable outgassing during the drying or curing of products.

c. Water-resistant after drying or curing and unaffected by high humidity, condensation or transient water exposure.

d. When used in exposed areas, shall be capable of being sanded and finished with similar surface treatments as used on the surrounding wall or floor surface.

6. Maximum flame spread of 25 and smoke development of 50 when tested in accordance with ASTM E84.

7. FM, UL, or WH rated or tested by an approved laboratory in accordance with ASTM E814.

8. Materials to be asbestos free.

B. Glass pipe, plastic pipe or conduits, unenclosed cables, or other non-metallic materials: Comply to requirements for metallic pipe and as follows:

1. Penetrations containing loose electrical cables, computer data cables, and communications cables protected using firestopping systems that allow unrestricted cable changes without damage to the seal.

2. Intumescent products which expand to seal the opening and act as fire, smoke, toxic fumes, and, water sealant.

C. One-Hour Fire Barrier Sealant: One-component neutral-cure silicone rubber sealant.

1. Manufacturers:

a. 3M “Fire Barrier 2000 or 2003 Sealant, Caulk Type CP25 or No. 303 Putty”;

b. International Protective Coatings “Flame-Safe FS500 or FSP1000 Putty”;

c. Fipro “A/D Silicone Firebarrier Sealant-SL”;

d. Or equal.

2. Two Hour Fire Barrier Sealant: 3M CP25 Sealant.

2.02 SMOKE STOPPING IN SMOKE PARTITIONS

A. Non-Fire-rated Smoke Stop Partitions: Sealants around penetrations in smoke stop partitions or barriers not identified on the plans as part of a rated assembly shall comply as follows:

1. Use silicone sealant in smoke partitions as specified in Section 07 90 00, Joint Sealers.

2. Use mineral fiber filler and bond breaker behind sealant.

3. Sealants shall have a maximum flame spread of 25 and smoke developed of 50 when tested in accordance with E84.

4. When used in exposed areas capable of being sanded and finished with similar surface treatments as used on the surrounding wall or floor surface.

B. Fire-rated Smoke Stop Partitions: Sealants around penetrations in smoke stop partitions or barriers that are identified on the plans as part of a rated assembly shall comply as follows:

1. Use listed firestop system specified above.

2.03 ACCESSORIES

A. Stuffing Material: Mineral fiber matting, permanent.

B. Retainers: Clips to support mineral fiber matting.

PART 3 EXECUTION

3.01 EXAMINATION

A. Submit product data and installation instructions, as required by article, submittals, after an on site examination of areas to receive firestopping.

B. Examine substrates and conditions for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of firestopping.

3.02 PREPARATION

A. Remove dirt, grease, oil, loose materials, or other substances that prevent adherence and bonding or application of the firestopping or smoke stopping materials.

B. Remove insulation on insulated pipe for a distance of six inches (150 mm) on either side of the fire rated assembly prior to applying the firestopping materials unless the firestopping materials are tested and approved for use on insulated pipes.

C. Install backing materials to arrest liquid material leakage.

3.03 INSTALLATION

A. Do not begin work until the specified material data and installation instructions of the proposed firestopping systems have been submitted and approved.

B. Install firestopping systems with smoke stopping in accordance with FM, UL, WH, or other approved system details and installation instructions.

C. Install smoke stopping seals in smoke partitions.

3.04 FIELD QUALITY CONTROL

A. Owner’s Fire Marshal will examine completed firestopping to determine, in general, if it is being installed in compliance with requirements.

B. Do not proceed to enclose firestopping with other construction until reports of Owner Fire Marshal’s examinations are issued.

C. Where deficiencies are found, repair or replace firestopping so that it complies with requirements.

3.05 CLEANING

A. Remove materials, litter, and debris.

B. Clean up spills of liquid type materials.

END OF SECTION 07 84 00

PART 1 GENERAL

1.01 SUMMARY

A. Provide joint sealants, for interior and exterior joints not specified elsewhere, with backing rods and accessories as required for complete installation. Joint sealers include sealants and caulking as indicated.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Product Data: Furnish manufacturer's descriptive literature.

C. Samples: Furnish samples of each type of exposed joint sealer in required colors.

D. Certifications:

1. Furnish manufacturer's certification joint sealers comply with Contract Documents and are suitable for Project applications.

2. Furnish certification indicating installers are trained in proper use of specified products, qualified, and familiar with proper installation techniques.

1.04 QUALITY ASSURANCE

A. Performance Requirements:

1. Select materials for compatibility with joint surfaces and indicated exposures.

2. Where not indicated, select modulus of elasticity and hardness or grade recommended by manufacturer for each application indicated.

3. Comply with applicable limitations on volatile organic compound (VOC) emissions.

B. Installer Qualifications: Firm with minimum five years successful experience on projects of similar type and size, using specified products.

1. Installers shall be familiar with proper application procedures to ensure maximum joint sealer expansion and contraction capabilities.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, cure time, and mixing instructions.

1.06 SITE CONDITIONS

A. Do not proceed with installation of joint sealers under unfavorable weather conditions.

B. Install elastomeric sealants when temperature is in lower third of temperature range recommended by manufacturer.

1.07 WARRANTY

A. Special Warranty: Repair or replace joint sealers which fail to perform as intended, because of leaking, crumbling, hardening, shrinkage, bleeding, sagging, staining and loss of adhesion.

PART 2 PRODUCTS

2.01 MATERIALS

A. Elastomeric Sealants:

1. Single-Component Low Modulus Silicone Sealant: ASTM C920 Type S, Class 25, Grade NS; minimum 50% expansion and compaction capability.

a. Provide at exterior locations not exposed to traffic.

b. Manufacturers:

1) General Electric Co./Silpruf, Silglaz or GESIL.

2) Dow Corning Corp./790 or 795.

3) Pecora Corp./864 Architectural Silicone.

4) Tremco/Spectrum 3.

2. Multi-Component Polyurethane Sealant: ASTM C920, Type M, Grade P, Class 25, self-leveling; minimum 25% expansion and compaction capability.

a. Provide following at traffic bearing locations.

b. Manufacturers:

1) Pecora Corp./NR-200 Urexpan.

2) Tremco/Vulkem 245.

3) Sonneborn Division of ChemRex /SL 2

3. Mildew-Resistant Silicone Rubber Sealant: ASTM C920, Type S, Grade NS, Class 25, compounded with fungicide, specifically for mildew resistance and recommended for interior joints in wet areas.

   a. Provide at interior joints in wet areas.

   b. Manufacturers:

      1) General Electric Co./SCS 1702 Sanitary Sealant.

      2) Dow Corning Corp./786 Bathtub Caulk.

      3) Pecora Corp./863 #345 White.

      4) Tremco/Tremsil 200.

B. Non-Elastomeric Sealants:

1. Acrylic-Emulsion Sealant: ASTM C834 acrylic or latex-rubber-modified acrylic sealant, permanently flexible, non-staining and non-bleeding; recommended for general interior exposure; compatible with paints specified in Section 09 90 00.

   a. Provide at general interior applications.

   b. Manufacturers:

      1) Pecora Corp./AC-20.

      2) Sonneborn Division of ChemRex/Sonolac.

      3) Tremco/Ultrem 1500

C. Miscellaneous Materials:

1. Primers/Sealers: Non-staining types recommended by joint sealer manufacturer for joint surfaces to be primed or sealed.

2. Joint Cleaners: Non-corrosive types recommended by joint sealer manufacturer; compatible with joint forming materials.

3. Bond Breaker Tape: Polyethylene tape as recommended by joint sealer manufacturer where bond to substrate or joint filler must be avoided for proper performance of joint sealer.

4. Sealant Backer Rod: Compressible polyethylene foam rod or other flexible, permanent, durable non-absorptive material as recommended by joint sealer manufacturer for compatibility with joint sealer.

   a. Oversize backer rod minimum 30% to 50% of joint opening.

D. Colors: Provide colors indicated or as selected by Architect from manufacturer's full range of colors.

PART 3 EXECUTION

3.01 PREPARATION

A. Prepare joint surfaces in accordance with ASTM C1193 and as recommended by joint sealer manufacturer.

B. Clean joint surfaces immediately before installation of joint sealer; remove dirt, insecure materials, moisture and other substances which could interfere with bond of joint sealer.

C. Prime or seal joint surfaces where recommended by joint sealer manufacturer; do not allow primer/sealer to spill or migrate onto adjoining surfaces.

D. Ensure protective coatings on surfaces in contact with joint sealers have been completely stripped.

3.02 INSTALLATION

A. Comply with manufacturer's printed instructions and ASTM C1193, except where more stringent requirements are shown or specified.

B. Set sealant backer rods at proper depth or position in joint to coordinate with other work, including installation of bond breakers and sealant; do not leave voids or gaps between ends of backer rods.

1. Do not stretch, twist, puncture or tear backer rods.

C. Install bond breaker tape where required by manufacturer's recommendations to ensure joint sealers will perform properly.

D. Size materials to achieve required width/depth ratios.

E. Employ installation techniques that will ensure joint sealers are deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of bond surfaces equally on opposite sides.

F. Joint Configuration: Fill sealant joint to a slightly concave surface, slightly below adjoining surfaces, unless otherwise indicated.

G. Where horizontal joints are between a horizontal surface and vertical surface, fill joint to form a slight cove, so that joint will not trap moisture or dirt.

H. Install joint sealers to depths recommended by joint sealer manufacturer but within the following general limitations, measured at center (thin) section of bead.

1. Horizontal Joints: 75% width with minimum depth of 3/8".

2. Elastomeric Joints: 50% width with minimum depth of 1/4".

3. Non-Elastomeric Joints: 75% to 125% of joint width.

I. Spillage: Do not allow sealants or compounds to overflow or spill onto adjoining surfaces, or to migrate into voids of adjoining surfaces.

1. Clean adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage.

J. Cure joint sealers in compliance with manufacturer's instructions and recommendations to obtain high early bond strength, internal cohesive strength and surface durability.

K. Maintain finished joints free of embedded matter, ridges and sags.

END OF SECTION

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PART 1 GENERAL

1.01 SUMMARY

A. Interior non-rated and fire-rated welded steel doors and frames.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 REFERENCES

A. Americans with Disabilities Act (ADA) - Accessibility Guidelines for Buildings and Facilities.

B. DHI - Door Hardware Institute: The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.

C. ANSI/SDI 100 - Standard Steel Door and Frames.

D. ASTM A366 - Steel, Carbon, Cold-Rolled Sheet, Commercial Quality.

E. ASTM A525 - Steel Sheet, Zinc Coated (Galvanized) by the Hot Dip Process.

F. ASTM C976 - Thermal Performance of Building Assemblies by Means of a Calibrated Hot Box.

G. ASTM E90 - Measurement of Airborne-Sound Transmission Loss of Building Partitions.

H. ASTM E413 - Classification for Rating Sound Insulation.

I. SFM Standard 12-7-4

1.04 SUBMITTALS

A. Section 01 33 00 - Submittals: Submittal Procedures.

B. Shop Drawings: Indicate door and frame configuration, anchor types and spacings, location of cut-outs for hardware, glazing and louvers, reinforcement, and finish.

C. Product Data: Fire rated doors and frames, showing conformance with CBC and Underwriters Laboratory, Inc., or Warnock Hersey or Factory Mutual fire rating requirements.

D. Instructions: Submit manufacturer's installation instructions.

E. Manufacturer's Certification: Certify that Products meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

A. Conform to the requirements of ANSI/SDI-100 and Americans with Disabilities Act (ADA) - Accessibility Guidelines for Buildings and Facilities.

B. Verify that field measurements are as indicated on approved shop drawings.

C. Performance Standards:

1. Fire-Rated Assemblies: SFM Standard 12-7-4, and acceptable testing agency listing.
2. Sound-Rated Assemblies at Mechanical Rooms: ASTM E1408 and ASTM E413.

1.06 REGULATORY REQUIREMENTS

A. Fire rated doors and frames construction to conform to SFM Standard 12-7-4.

B. Installed door and frame assemblies to conform to CBC for fire rated class indicated on schedule.

1.07 DELIVERY, STORAGE, AND PROTECTION

A. Prior to shipment label each door and frame to show location, size, door swing and other pertinent information.

B. Accept doors and frames on site in manufacturer's packaging. Inspect for damage.

1.08 WARRANTY

A. Provide five-year warranty against defects in manufacture and materials.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Ceco Door Products;

B. Curries, “747 Series”;

C. Republic, “DS Series”;

D. Steelcraft, “Series B”;

E. Or approved equal.

2.02 DOORS AND FRAMES

A. Interior Flush Doors: SD1-100, Heavy Duty, Grade 2, Model 1.

B. Interior Frames: Welded 16 gage thick material, core thickness to suit model and grade of doors. Knockdown frames not permitted.

C. Inserts, Bolts, and Fasteners: Manufacturer's standard units for the required application; hot-dip-galvanize items to be embedded in or in contact with concrete foundation wall or slab-on-grade.

2.03 DOOR CORES

A. Core: Vertical steel stiffeners at flush doors.

2.04 ACCESSORIES

A. Rubber Silencers: Resilient rubber.

B. Glass: As specified in Section 08 80 00 - Glazing.

C. Glazing Stops: Rolled steel channel shape, butted corners, prepared for countersink style tamperproof screws.

2.05 PROTECTIVE COATINGS

A. Primer: Manufacturer's standard red-oxide/zinc-chromate primer for interior surfaces.

B. Paint galvanized surfaces with zinc-dust/zinc-oxide primer.

2.06 FABRICATION

A. Fabricate frames and doors in accordance with requirements of the Steel Door Institute specification SDI-100, and as indicated on drawings. Provide welded frames at interior doors.

B. Fabricate doors and frames with hardware reinforcement plates welded in place. Drill and tap for surface-applied finish hardware. Provide mortar guard boxes where indicated.

C. Accurately form and cut mitered corners of welded type frames. Weld on inside surfaces. Sand-welded joints to a smooth uniform finish. Use welded frames at all interior locations. Use of splice plates at corners is not acceptable.

D. Fabricate frames of pairs of doors wider than 3'-6" of 12 gage steel.

E. Reinforce frames wider than 48 inches with roll formed steel channels fitted tightly into frame head, flush with top.

F. Prepare frame for silencers. Provide three single silencers for single doors on strike side, and two single silencers on frame head at double doors.

G. Provide jamb and floor anchors in accordance with SDI-100.

H. Attach channel or angle spreaders at bottom of welded type doorframes to ensure proper alignment while shipping.

I. Fill surface depressions with metallic paste filler and sand to a smooth uniform finish.

J. Provide prime coat on doors and frames, including backs of frames.

K. Touch up areas with zinc rich paint where galvanized coating has been removed due to welding, sanding or handling.

L. Attach fire rated label to each frame and door unit scheduled to be labeled.

2.07 FINISH

A. Shop primer, compatible with finish paint specified in Section 09 90 00.

PART 3 EXECUTION

3.01 EXAMINATION

A. Section 01 31 00 - Project Management and Coordination.

B. Verify that opening sizes and tolerances are acceptable.

3.02 INSTALLATION

A. Install frames in accordance with SDI-100.

B. Install adjustable frames in accordance with manufacturer's instructions.

C. Install doors in accordance with DHI.

D. Coordinate installation of glass and glazing.

E. Install door louvers plumb and level.

F. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.03 ADJUSTING

A. Adjust doors for smooth operation and balanced door movement.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. This section specifies the installation of wood doors.

B. Factory finished wood doors.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 REFERENCES

A. ANSI/NWMA I. S. - Industry Standard for Wood Flush Doors.

B. WIC - Woodwork Institute of California, Manual of Millwork Standards of the Woodwork Industry, latest edition.

1.04 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Shop Drawings: Illustrate door opening criteria, elevations, sizes, types, swings, undercuts required, identify cutouts for glazing and louvers, blocking for hardware attachment.

C. Product Data: Indicate door core materials and construction, veneer species, type and characteristics.

D. Manufacturer's Installation Instructions: Indicate special installation instructions.

E. Labeled fire rated doors showing conformance with NFPA 80.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with WIC, Section 20, Custom Grade.

B. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three (3) years documented experience.

C. Millwork Shop: Company specializing in custom cabinetry and doors specified in this section with minimum three years documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Package, deliver, and store doors in accordance with W.I.C. Section 20.

1.07 COORDINATION

A. Coordinate work with door opening construction, door frame and door hardware installation.

1.08 WARRANTY

A. Provide manufacturer's written standard lifetime warranty for full, unlimited, replacement for the life of the original installation for new interior doors.

B. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, telegraphing core construction.

PART 2 PRODUCTS

2.01 DOOR TYPES

A. Interior Doors: 1-3/4 inch flush wood doors.

a. Veneer Finish per Architectural Finishes List, Section 09 06 00.

B. Factory Finish: Shop prime with polyurethane opaque finish

a. Color and door veneer species per Architectural Finishes List, Section 09 06 00.

2.02 FABRICATION

A. Fabricate wood doors in accordance with requirements of the Woodwork Institute of California (WIC).

B. Make cut-outs and provide stops for glass and louvers. Refer to Drawings for size of openings required.

C. Bevel strike edge of single acting doors 1/8 inch in 2 inches. Radius strike edge of double acting swing doors 2-1/8 inches.

D. Prepare doors to receive hardware. Refer to Section 08 71 00 for hardware requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that opening sizes and tolerances are acceptable.

B. Do not install doors in frame openings that are not plumb or are out of tolerances for size or alignment.

3.02 DOOR PREPARATION

A. Field, shop or factory preparation: Do not violate the qualified testing and inspection agency label requirements for fire rated doors.

B. Clearances between Doors and Frames and Floors:

1. Maximum 3 mm (1/8 inch) clearance at the jambs, heads, and meeting stiles, and a 19 mm (3/4 inch) clearance at bottom, except as otherwise specified.

2. Maximum clearance at bottom of sound rated doors, light-proofed doors, doors to operating rooms, and doors designated to be fitted with mechanical seal: 10 mm (3/8 inch).

C. Provide cutouts for special details required and specified.

D. Rout doors for hardware using templates and location heights specified in Section, 08 71 00 DOOR HARDWARE.

E. Fit doors to frame, bevel lock edge of doors 3 mm (1/8 inch) for each 50 mm (two inches) of door thickness, undercut where shown.

F. Immediately after fitting and cutting of doors for hardware, seal cut edges of doors with two coats of water-resistant sealer.

G. Finish surfaces, including both faces, top and bottom and edges of the doors smooth to touch.

H. Apply a steel astragal to meeting style of active leaf of pair of doors or double egress smoke doors.

3.03 INSTALLATION

I. Install doors in accordance with W.I.C. Technical Bulletin No. 429 REV 1-99.

J. Trim door width by cutting equally on both jamb edges.

K. Trim door height by cutting bottom edges to a maximum of 3/4 inch.

L. Pilot drill screw and bolt holes.

M. Machine cut for hardware. Core for hardware and cylinders.

N. Coordinate the installation of glass and glazing in wood doors.

O. Prime and/or seal all factory-made cutouts prior to delivery.

P. Finishing: All four edges and both faces of doors shall be factory finished.

3.04 INSTALLATION TOLERANCES

A. Coordinate to W.I.C. requirements for fit and clearance tolerances.

B. Conform to W.I.C. requirements for maximum diagonal distortion.

3.05 ADJUSTING

A. Adjust doors for smooth and balanced door movement.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. Steel access panels.

1.02 RELATED WORK

A. All All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 SUBMITTALS

A. Shop Drawings:

1. Indicate sizes, materials, thickness, fabrication methods, panel door and frame reinforcement, anchorage, and installation details.

2. Provide layout drawings, indicating dimensioned locations of proposed access panels, size of each panel, and installation details. Determine and indicate required access panels in finished surfaces, whether furnished under this section or as part of the Work of Fire Protection, Plumbing, Mechanical or Electrical Divisions.

1.04 QUALITY ASSURANCE

A. Panels shall be provided with UL listings and labels.

B. Access panels and frames shall be products of one manufacturer.

1.05 DELIVERY, STORAGE AND HANDLING

A. Panels and Frames: Provide protection as required by manufacturer to protect panels from damage during storage.

PART 2 PRODUCTS

2.01 MATERIALS

A. Access Panels:

Non-Rated	Milcor	Karp	Nystrom
Plaster	K	DSC214M	APPW
Drywall	DW	DSC214M	APWB

Rated B-Label			
Plaster	M	KRP150PR	APFR-WP
Drywall	M	KRP150FR	APFR-WP

B. Provide prime coat finish suitable for field painting for panels installed in other finishes.

PART 3 EXECUTION

3.01 GENERAL

A. Provide access panels in finish construction, where indicated on the Drawings, wherever required for access to concealed mechanical and electrical equipment, and where required by codes. Panels indicated on Architectural Drawings shall be furnished under this section. Required panels for access to equipment, but not indicated on Architectural Drawings, shall be furnished as part of the Work requiring the access.

3.02 INSTALLATION

A. Install panels accurately in location, perfect alignment, plumb, straight and true. Brace to prevent displacement by adjacent Work.

B. Examine panels after installation for proper opening, closing and clearances. Replace damaged or defective panels.

3.03 CLEAN UP

A. Remove rubbish, debris and waste materials and legally dispose of off the Project site.

3.04 PROTECTION

A. Protect the Work of this Section until Substantial Completion.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. This section specifies aluminum entrances, storefronts and manual sliding doors and other components to make complete assemblies.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 SUBMITTALS

A. Submit in accordance with Section 01 33 23, Shop Drawings, Product Data, and Samples.

B. Shop Drawings: (1/2 full scale) showing construction, anchorage, reinforcement, installation details and glass elevations and images.

C. Manufacturer’s Literature and Data:

1. Doors, each type.

D. Samples:

1. Two samples of anodized aluminum of each color showing finish and maximum shade range. Glass showing color and finish.

E. Manufacturer’s Certificates:

1. Stating that aluminum has been given specified thickness of anodizing.

2. Indicating manufacturer’s qualifications specified.

1.04 QUALITY ASSURANCE

A. Approved by Architect is required of products of proposed manufacturer, or supplier, and will be based upon submission by Contractor certification.

B. Certify manufacturer regularly and presently manufactures aluminum entrances and storefronts as one of their principal products.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, cure time, and mixing instructions.

B. Store balanced glass door and aluminum material in weather-tight and dry storage facility.

C. Protect from damage from handling, weather and construction operations before, during and after installation.

1.06 REFERENCES

A. The publications listed below form a part of this specification to the extent reference. The publications are referenced in the text by the basic designation only.

B. America Society for Testing and Materials (ASTM):

B209-07	Aluminum and Aluminum-Alloy Sheet and Plate
B221-08	Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes
E283-04	Rate of Air Leakage Through Exterior Windows, Certain Walls, and Doors Under Specified Pressure Differences Across the Specimen
E331-00 (R2009)	Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference
F468-10	Nonferrous Bolts, Hex Cap Screws, and Studs for General Use
F593-03(R2008)	Stainless Steel Bolts, Hex Cap Screws, and Studs

C. National Association of Architectural Metal Manufacturers (NAAMM):

AMP 500 Series	Metal Finishes Manual

PART 2 PRODUCTS

2.01 MATERIALS

A. Aluminum, ASTM B209 and B221:

1. Alloy 6063 temper T5 for doors, door frames, fixed glass sidelights, storefronts, windows and transoms.

2. For color anodized finish, use aluminum alloy as required to produce specified color.

3. Sheet and plate to conform to ASTM-B209.

B. Thermal Break: Manufacturer standard low conductive material retarding heat flow in the framework, where insulation glass is scheduled.

C. Fasteners:

1. Aluminum: ASTM F468, Alloy 2034.

2. Stainless Steel: ASTM F593, Alloy Groups 1, 2 and 3.

D. Aluminum Entrance

1. Basis of Design: Aluminum entrance door shall be wide stile series as manufactured by Kawneer (Series 500) or Tubelite Architectural Products. Sizes and sidelites shall be as scheduled on the plans

2. Glazing strips shall be square glass stops, snap-in, tamperproof, with no exposed screws. Provide neoprene gaskets for glazing strips.

3. Provide tempered insulated glazing as specified in Section 08 80 00.

4. Provide intermediate horizontal rail, 8 ¼" high.

5. Provide 12" high bottom and top rail.

E. Framing

1. Provide nominal 2" x 4 1/2" thermally-broken aluminum framing system with positive mechanical bonding of interior and exterior aluminum sections at exterior frames, as manufactured by door manufacturers. Interior frames non-thermally broken.

a. Finish: To match door and framing.

2. Position frame and secure in opening with concealed fasteners to maintain the integrity of thermal breaks in frame and wall, and in accordance with details provided.

F. Glazing

1. See Section 08 80 00.

G. Hardware

1. Application of materials to provide bridge and seal air leakage pathways in

a. Finish: To match door and framing.

2. Threshold: Kawneer extruded aluminum threshold for use with offset pivot hinges – clear anodized aluminum.

3. Hinges: Continuous Hinge

4. Weatherstripping: Kawneer sealair weather stripping system for single acting offset pivot doors. Include optional sill sweep in door.

5. Closers: As specified in Section 08 71 00.

6. See Section 08 71 00 for Controlled Exit Device specification and Electrical Specifications.

H. Sealant

1. Glazing Sealant: Clear structural silicone sealant, G.E. Dow, or approved equal.

2. Frame to masonry component gun grade polyurethane, Tremco, Bostic, or Sonneborn or approved equal. Color to be selected by Architect/Engineer.

I. Miscellaneous: .060" thick aluminum break metal cladding at windows or doors. Finish to framing metals which it adjoins. Extruded aluminum at appropriate locations to prevent damage to framing and break metal.

2.02 FABRICATION

A. Fabricated doors, of extruded aluminum sections not less than 3 mm (0.125 inch) thick. Fabricate glazing beads of aluminum not less than 1.0 mm (0.050 inch) thick.

B. Accurately form metal parts and accurately fit and rigidly assemble joints, except those joints designed to accommodate movement. Seal joints to prevent leakage of both air and water.

C. Make welds in aluminum in accordance with the recommended practice AWA D1.2. Use electrodes and methods recommended by the manufacturers of the metals and alloys being welded. Make welds behind finished surfaces so as to cause no distortion or discoloration of the exposed side. Clean welded joints of welding flux and dress exposed and contact surfaces.

D. Make provisions in doors and frames to receive the specified hardware and accessories. Coordinate schedule and template for hardware specified under Section 08 71 00, Door Hardware. Where concealed closers or other mechanisms are required, provide the necessary space, cutouts, and reinforcement for secure fastening.

E. Fit and assemble the work at the manufacturer's plant. Mark work that cannot be permanently plant-assembled to assure proper assembly in the field.

2.03 PROTECTION OF ALUMINUM

A. Isolate aluminum from contact with dissimilar metals other than stainless steel, white bronze, or zinc by any of the following:

1. Coat the dissimilar metal with two coats of heavy-bodied alkali resistant bituminous paint.

2. Place caulking compound, on non-absorptive tape, or gasket between the aluminum and the dissimilar metal.

3. Paint aluminum in contact with mortar, concrete and plaster, with a coat of aluminum paint primer.

2.04 FINISH

A. In accordance with NAAMM AMP 500 Series.

B. Fluorocarbon Finish: AAMA 605.2, high performance coating. Color Finish: Chemically etched medium matte, with integrally colored anodic coating Class I Architectural, 7 mils thick. More than 50 percent variation of the maximum shade range approved will not be accepted in a single component or in adjacent components, stiles, and rails on a continuous series.

C. Color: See specification section 09 06 00 – Schedule for Finishes

2.05 DISTRIBUTION

A. Framing and door to accept glass as indicated on the drawings and specified in Section 08 81 00.

B. Hardware
Existing aluminum frames will be retained. New aluminum doors to be provided. Hardware to match existing and be replaced in kind.

1. AL-1: (Each leaf)
   - Hinge
   - Closer
   - Overhead Stop
   - Push/Pull Bar Set
   - Weatherstripping

2. AL-2: (Each leaf)
   - Hinge
   - Concealed Vertical Rod Exit Device
   - Entrance Lockset
   - Cylinder
   - Closer
   - Overhead Stop
   - Drip Cap
   - Door Sweep
   - Threshold
   - Weatherstripping

PART 3 EXECUTION

3.01 INSPECTION

A. Beginning of installation shall signify acceptance of substrate and adjacent conditions as being proper and acceptable. Corrections of defects due to installation of products on un acceptable substrata will be at Contractor's expense at no additional cost to Owner.

3.02 INSTALLATION

A. Fabricate only from approved shop drawings.

B. Install all doors, frames, sidelites and accessories per manufacturer's written instructions and final shop drawings.

C. Anchor securely in place; install plumb, level and in true alignment. Isolate dissimilar materials to prevent corrosion.

D. Allowable Installation Tolerances: Install work plumb and true, in alignment and in relation to lines and grades shown. Variation of 3 mm (1/8 inch) in 2400 mm (eight feet), non-accumulative, is maximum permissible for plumb, level, warp, bow and alignment.

E. Install hardware specified under Section 08 71 00, Door Hardware.

3.03 PROTECTION, CLEANING AND REPAIRING

A. Remove all mastic smears and other unsightly marks, and repair any damaged or disfiguration of the work. Protect the installed work against damage or abuse.

B. Adjust and check each operating item of hardware to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application specified.

C. Clean-up premises of all litter, dirt, and debris created by work of this Section.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. This Section includes the following types of automatic entrance doors:

1. Exterior bi-parting, sliding automatic entrance doors.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 REFERENCES

General: Standards listed by reference, including revisions by issuing authority, form a part of this specification section to extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation.

A. Underwriters Laboratories (UL):

1. UL 325 – Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems.

B. American National Standards Institute (ANSI) / Builders' Hardware Manufacturers Association (BHMA):

1. ANSI/BHMA A156.10: Standard for Power Operated Pedestrian Doors.

2. ANSI/BHMA A156.5: Standard for Auxiliary Locks and Associated Products

C. American Society for Testing and Materials (ASTM):

1. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

2. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate

D. American Association of Automatic Door Manufacturers (AAADM):

E. National Fire Protection Association (NFPA):

1. NFPA 101 – Life Safety Code.

2. NFPA 70 – National Electric Code.

F. California Building Code, CBC.2019:

G. Building Officials and Code Administrators International (BOCA), 1999:

H. National Association of Architectural Metal Manufacturers (NAAMM):

1. Metal Finishes Manual for Architectural and Metal Products.

I. American Architectural Manufacturers Association (AAMA):

1. AAMA 607.1 - Clear Anodic Finishes for Architectural Aluminum.

2. AAMA 611 Voluntary Specification for Anodized Architectural Aluminum.

3. AAMA 701 Voluntary Specification for Pile Weatherstripping and Replaceable Fenestration Weatherseals.

1.04 DEFINITIONS

A. Activation Device: Device that, when actuated, sends an electrical signal to the door operator to open the door.

B. Safety Device: Device that prevents a door from opening or closing, as appropriate.

1.05 PERFORMANCE REQUIREMENTS

A. Provide automatic entrance door assemblies capable of withstanding structural loads and thermal movements based on testing manufacturer's standard units in assemblies similar to those indicated for this Project.

B. Thermal Movements: Provide automatic entrance doors that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

C. Operating Range: Minus 30 deg F (Minus 34 deg C) to 130 deg F (54 deg C).

D. Opening-Force Requirements for Egress Doors: Not more than 50 lbf (222 N) required to manually set door in motion if power fails, and not more than 15 lbf (67 N) required to open door to minimum required width.

E. Closing-Force Requirements: Not more than 30 lbf (133 N) required to prevent door from closing.

1.06 SUBMITTALS

A. Submit listed submittals in accordance with Conditions of the Contract and Division 1 Specification Sections.

B. Shop Drawings: Include plans, elevations, sections, details, hardware mounting heights, and attachments to other work.

C. Closeout Submittals:

1. Owner’s Manual.

2. Warranties.

1.07 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained for installation and maintenance of units required for this Project with 10 years of experience installing and maintaining sliding automatic entrances.

B. Manufacturer Qualifications: A qualified manufacturer with a manufacturing facility certified under ISO 9001 and with company certificate issued by AAADM.

C. Certifications: Automatic sliding door systems shall be certified by the manufacturer to meet performance design criteria in accordance with the following standards:

1. ANSI/BHMA A156.10.

2. NFPA 101.

3. Underwriter’s Laboratories 325 (UL) listed.

4. IBC

D. Source Limitations: Obtain automatic entrance door assemblies through one source from a single manufacturer.

E. Product Options: Drawings indicate sizes, profiles, and dimensional requirements of automatic entrance door assemblies and are based on the specific system indicated. Refer to Section 01 60 00 Product Requirements.

F. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

G. Emergency-Exit Door Requirements: Comply with requirements of authorities having jurisdiction for automatic entrance doors serving as a required means of egress.

1.08 PROJECT CONDITIONS

A. Field Measurements: Installer and Contractor shall verify openings to receive automatic entrance door assemblies by field measurements before fabrication and indicate measurements on Shop Drawings.

B. Mounting Surfaces: Installer and Contractor shall verify all surfaces to be plumb, straight and secure; substrates to be of proper dimension and material.

C. Other trades: Installer shall advise Contractor of any inadequate conditions or equipment.

1.09 COORDINATION

A. Templates: Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing automatic entrance doors to comply with indicated requirements.

B. Electrical System Roughing-in: Coordinate layout and installation of automatic entrance door assemblies with connections to power supplies.

1.10 WARRANTY

A. Automatic Entrance Doors shall be free of defects in material and workmanship for a period of one (2) years from the date of substantial completion.

B. During the warranty period the State shall engage a factory-trained technician to perform service and affect repairs. A safety inspection shall be performed after each adjustment or repair and a completed inspection form shall be submitted to the State.

C. During the warranty period all warranty work, including but not limited to emergency service, shall be performed during normal working hours.

PART 2 PRODUCTS

2.01 AUTOMATIC ENTRANCE DOORS

A. Manufacturers: Stanley Access Technologies; Besam Entrance Solutions; or Horton Automatics.

2.02 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.

1. Headers, stiles, rails, and frames: 6063-T6

2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.

3. Sheet and Plate: ASTM B 209.

B. Sealants and Joint Fillers: Performed under Division 7 Section "Joint Sealants".

2.03 AUTOMATIC ENTRANCE DOOR ASSEMBLIES

A. Provide manufacturer's standard automatic entrance door assemblies including doors, sidelites, framing, headers, carrier assemblies, roller tracks, door operators, activation and safety devices, and accessories required for a complete installation.

B. Sliding Automatic Entrance Doors:

1. Bi-Parting sliding doors:

a. Configuration: Two sliding leaves and two full sidelites.

b. Traffic Pattern: Two-way.

c. Emergency Breakaway Capability: Sliding leaves only.

d. Mounting: Between jambs

1.04 COMPONENTS

A. Framing Members: Manufacturer's standard extruded aluminum reinforced as required to support imposed loads.

1. Nominal Size: 1 ¾ inch by 4 ½ inch (45 by 115 mm).

B. Stile and Rail Doors and Sidelites: Manufacturer's standard 1 ¾ inch (45 mm) thick glazed doors with extruded-aluminum tubular stile and rail members. Incorporate concealed tie-rods that span full length of top and bottom rails or mechanically fasten corners with reinforcing brackets that are welded.

1. Glazing Stops and Gaskets: Snap-on, extruded-security aluminum stops and preformed gaskets.

2. Stile Design: Narrow stile; 2 inch (51 mm) nominal width.

3. Bottom Rail Design: Minimum 4 inch (102 mm) nominal height.

4. Muntin Bars: Horizontal tubular rail member for each door; 2 inch (51 mm) nominal width.

C. Glazing: Performed under Division 8 Section Glazing.

D. Headers: Fabricated from extruded aluminum and extending full width of automatic entrance door units to conceal door operators, carrier assemblies, and roller tracks. Provide hinged or removable access panels for service and adjustment of door operators and controls. Secure panels to prevent unauthorized access.

1. Mounting: Concealed, with one side of header flush with framing.

2. Capacity: Capable of supporting doors up to 220 lb (100 kg) per leaf over spans up to 14 feet (4.3 m) without intermediate supports.

E. Carrier Assemblies and Overhead Roller Tracks: Manufacturer's standard carrier assembly that allows vertical adjustment of at least 1/8 inch; consisting of urethane with precision steel lubricated ball-bearing wheels, operating on a continuous roller track. Support doors from carrier assembly by 2 inch diameter anti-riser wheels with factory adjusted cantilever and pivot assembly. Minimum two ball-bearing roller wheels and two anti-rise rollers for each active leaf.

1. Minimum Load Wheel Diameter: 2 1/2 inch (64 mm).

F. Thresholds: Manufacturer's standard thresholds as indicated below:

1. Continuous standard tapered extrusion double bevel.

2. All thresholds to conform to details and requirements for code compliance.

G. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, non-staining, non-bleeding fasteners and accessories compatible with adjacent materials.

H. Signage: Provide signage in accordance with ANSI/BHMA A156.10.

2.05 DOOR OPERATORS

A. Provide door operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for long-term, operation under normal traffic load for type of occupancy indicated.

B. Electromechanical Operators: Self-contained overhead unit powered by a minimum of 1/4 horsepower, permanent-magnet DC motor with gear reduction drive, microprocessor controller; and encoder.

1. Operation: Power opening and power closing.

2. Features:

a. Adjustable opening and closing speeds.

b. Adjustable back-check and latching.

c. Adjustable braking.

d. Adjustable hold-open time between 0 and 30 seconds.

e. Obstruction recycle.

f. On/Off switch to control electric power to operator.

g. Energy conservation switch that reduces door-opening width.

h. Variable rate open/closed speed control.

i. Closed loop speed control with active braking and acceleration.

j. Variable obstruction recycle time delay.

k. Self adjusting stop position.

l. Self adjusting closing compression force.

m. Optional Switch to open/Switch to close operation.

3. Mounting: Concealed.

4. Drive System: Synchronous belt type.

C. Electrical service to door operators shall be provided under Division 26 Electrical. Minimum service to be 120 VAC, 5 amps.

2.06 ELECTRICAL CONTROLS

A. Electrical Control System: Electrical control system shall include a microprocessor controller and position encoder. The encoder shall monitor revolutions of the operator shaft and send signals to microprocessor controller to define door position and speed. Systems utilizing external magnets and magnetic switches are not acceptable. A single controller shall be capable of controlling up to 2 operators per entrance system.

B. Life Cycle Data Counter: The microprocessor control shall incorporate a non-re-settable counter to track door operation cycles.

C. Controller Protection: The microprocessor controller shall incorporate the following features to ensure trouble free operation:

1. Automatic Reset Upon Power Up

2. Fuse Protection

3. Electronic Surge Protection

4. Internal Power Supply Protection.

5. Software “Watchdog” protection in the case of software malfunction.

D. Soft Start/Stop: A “soft-start” “soft-stop” motor driving circuit shall be provided for smooth normal opening and recycling.

E. Safety Search Circuitry: Provide system to recycle the sliding panels when an obstruction is encountered during the closing cycle. If an obstruction is detected, the system shall search for that object on the next closing cycle by reducing door closing speed prior to the previously encountered obstruction location, and will continue to close in check speed until doors are fully closed, at which time the doors will reset to normal speed. If obstruction is encountered again, the door will come to a full stop. The doors shall remain stopped until obstruction is removed and operate signal is given, resetting the door to normal operation.

F. Programmable Controller: Microprocessor controller shall be programmable and shall be designed for connection to a local configuration tool. Local configuration tool shall be software driven and shall be utilized via Palm® handheld interface. The following parameters may be adjusted via the configuration tool.

1. Operating speeds and forces as required to meet ANSI/BHMA A156.10.

2. Adjustable and variable features as specified in 2.05, B., 2.

3. Reduced opening position.

4. Firmware update.

5. Trouble Shooting

a. I/O Status.

b. Electrical component monitoring including parameter summary.

6. Entrance profile copy/paste.

G. Software for local configuration tool shall be available as a free download from the sliding automatic entrance manufacturer’s internet site.

2.07 ACTIVATION AND SAFETY DEVICES

A. Motion Sensors: Motion sensors shall be mounted on each side of door header to detect pedestrians in the activating zone, and to provide a signal to open doors in accordance with ANSI/BHMA A156.10. Units shall be programmable for bi-directional or uni-directional operation and shall incorporate K-band microwave frequency to detect all motion in both directions.

B. Presence Sensors: Presence sensors shall be provided to sense people or objects in the threshold safety zone in accordance with ANSI/BHMA A156.10. Units shall be self-contained, fully adjustable, and shall function accordingly with motion sensors provided. The sensor shall be enabled simultaneously with the door-opening signal and shall emit

an elliptical shaped infrared presence zone, centered on the doorway threshold line. Presence sensors shall be capable of selectively retuning to adjust for objects which may enter the safety zone; tuning out, or disregarding, the presence of small nuisance objects and not tuning out large objects regardless of the time the object is present in the safety zone. The door shall close only after all sensors detect a clear surveillance field.

C. Photoelectric Beams: In addition to the threshold sensor include a minimum of two (2) doorway holding beams. Photoelectric beams shall be pulsed infrared type, including sender receiver assemblies for recessed mounting.

2.08 HARDWARE

A. Provide units in sizes and types recommended by automatic entrance door and hardware manufacturers for entrances and uses indicated.

B. Emergency Breakaway Feature: Provide release hardware that allows panel(s) to swing out in direction of egress to full 90 degrees from any position in sliding mode. Maximum force to open panel shall be 50 lbf (222 N) according to ANSI/BHMA A156.10. Interrupt powered operation of panel operator while in breakaway mode.

1. Emergency breakaway feature shall include at least one adjustable detent device mounted in the top of each breakaway panel to control panel breakaway force.

C. Exterior sliding doors shall be equipped keyed deadbolt, with indicating window and signed “THIS DOOR TO REMAIN UNLOCKED WHEN THIS SPACE OCCUPIED”. Sign shall have letters not less than 1 inch in height and the color shall contrast to the background color.

D. Provide solenoid lock assembly to automatic sliding doors. Solenoid lock assembly wired so that when the door “Enter” switch is set to the “Yes” or “Automatic” position that lock remains constantly unlocked. The inside and outside sensors operate the door. Provide 24VDC power supply. Door position switch, side screen switch and counter.

E. Control Switch: Provide manufacturer’s standard header mounted rocker switches to allow for full control of the automatic entrance door. Controls to include, but are not limited to:

1. Power On/Off

2. Reduced Opening

3. Open/Closed/Automatic

F. Sliding Weather Stripping: Manufacturer's standard replaceable components complying with AAMA 701; made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.

G. Weather Sweeps: Manufacturer's standard adjustable nylon brush sweep mounted to underside of door bottom.

2.09 FABRICATION

A. Factory fabricates automatic entrance door assembly components to designs, sizes, and thickness indicated and to comply with indicated standards.

1. Form aluminum shapes before finishing.

2. Use concealed fasteners to greatest extent possible.

a. Where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration, use self-locking devices.

b. Reinforce members as required to receive fastener threads.

B. Framing: Provide automatic entrance doors as prefabricated assemblies.

1. Fabricate tubular and channel frame assemblies with manufacturer's standard mechanical or welded joints. Provide sub-frames and reinforcement as required for a complete system to support required loads.

2. Perform fabrication operations in manner that prevents damage to exposed finish surfaces.

3. Form profiles that are sharp, straight, and free of defects or deformations.

4. Prepare components to receive concealed fasteners and anchor and connection devices.

5. Fabricate components with accurately fitted joints with ends coped or mitered to produce hairline joints free of burrs and distortion.

C. Doors: Factory fabricated and assembled in profiles indicated. Reinforce as required to support imposed loads and for installing hardware.

D. Door Operators: Factory fabricated and installed in headers, including adjusting and testing.

E. Glazing: Fabricate framing with minimum glazing edge clearances for thickness and type of glazing indicated.

F. Hardware: Factory install hardware to the greatest extent possible; remove only as required for final finishing operation and for delivery to and installation at Project site.

2.10 ALUMINUM FINISHES

A. Comply with NAAMM Metal Finishes Manual for Architectural and Metal Products for recommendations for applying and designing finishes. Finish designations prefixed by AA comply with system established by Aluminum Association for designing finishes.

B. Class II, Clear Anodic Finish: AA-M10C22A31 Mechanical Finish: as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.40 mils minimum complying with AAMA 611-98, and the following:

1. AAMA 607.1

2. Applicator must be fully compliant with all applicable environmental regulations and permits, including wastewater and heavy metal discharge.

C. Color: See specification section 09 06 00 – Schedule for Finishes

PART 3 EXECUTION

3.01 INSPECTION

A. Examine conditions for compliance with requirements for installation tolerances, header support, and other conditions affecting performance of automatic entrance doors. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Do not install damaged components. Fit frame joints to produce joints free of burrs and distortion. Rigidly secure non-movement joints.

B. Entrances: Install automatic entrance doors plumb and true in alignment with established lines and grades without warp or rack of framing members and doors. Anchor securely in place.

1. Install surface-mounted hardware using concealed fasteners to greatest extent possible.

2. Set headers, carrier assemblies, tracks, operating brackets, and guides level and true to location with anchorage for permanent support.

C. Door Operators: Connect door operators to electrical power distribution system as specified in Division 26 Sections.

D. Glazing: Install glazing as specified in Division 8 Section "Glazing".

E. Sealants: Comply with requirements specified in Division7 Section "Joint Sealants" to provide weather tight installation.

3.03 FIELD QUALITY CONTROL

A. Testing Services: Factory Trained Installer shall test and inspect each automatic entrance door to determine compliance of installed systems with applicable ANSI standards.

3.04 ADJUSTING

A. Adjust door operators, controls, and hardware for smooth and safe operation, for weather-tight closure, and complying with requirements in ANSI/BHMA A156.10.

3.05 CLEANING AND PROTECTION

A. Clean glass and aluminum surfaces promptly after installation. Remove excess glazing and sealant compounds, dirt, and other substances. Repair damaged finish to match original finish. Comply with requirements in Division 8 Section “Glazing”, for cleaning and maintaining glass.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. This section includes translucent sandwich panel skylights and accessories as shown on the drawings and schedules and as indicated by the requirements of this section.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 REFERENCES

A. ASTM International:

1. ASTM E 84 Standard Test Method for flame spread and smoke development.

2. ASTM D 635 Standard Test Method for burn extent.

3. ASTM D 2244 in accordance with ASTM D 1435 Standard Test Method for Color change.

4. UL 972 Standard Test Method for Impact strength.

5. ASTM D 1037 Standard Test Method for Accelerated aging.

6. ASTM C 297 Standard Test Method for Bond strength.

7. ASTM D 1929 Standard Test Method for Self-ignition.

8. ASTM E 108 Standard Test Method for Class A burning brand.

9. ASTM E 283 Standard Test Method for Air infiltration.

10. ASTM E 331 Standard Test Method for Water penetration.

11. ASTM E 72 and E 330 Standard Test Method for Uniform load deflection.

12. ASTM E 661 Standard Test Method for Concentrated and Impact.

1.04 SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, including preparation

instructions and recommendations, storage and handling requirements, installation methods and maintenance instructions.

B. Shop Drawings: Include plans, elevations, sections, and details, indicating dimensions, tolerances, profiles, anchorage, connections, fasteners, provisions for expansion and contraction, drainage, flashing, finish, glazing, and attachments to other Work.

C. Samples:

1. Submit sample sets of color chips for initial selection representing manufacturer's full range of available colors and finishes.

D. Design Data:

1. Submit manufacturer's structural calculations showing sizes of framing members and loads applied to supporting structure based on design loads.

E. Test Reports: Submit certified test reports from a qualified independent testing agency, indicating skylights comply with specified requirements. Submit results from the following:

1. Flame spread and smoke development, ASTM E 84.
2. Burn extent, ASTM D 635.
3. Color change, ASTM D 2244 in accordance with ASTM D 1435.
4. Impact strength, exterior face sheets, UL 972.
5. Accelerated aging, ASTM D 1037.
6. Bond strength, ASTM C 297.
7. Self-ignition, ASTM D 1929.
8. Class A burning brand, ASTM E 108.
9. Air infiltration, ASTM E 283.
10. Water penetration, ASTM E 331.
11. Uniform load deflection, ASTM E 72 and E 330.
12. Concentrated and Impact, ASTM E 661.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum ten years documented experience in the fabrication of skylights of the type required for this project and capable of providing field service representation during installation.

B. Installer Qualifications: Minimum five years documented experience in the work of this section, specializing in work similar to project requirements and approved by manufacturer.

1.06 DELIVERY, STORAGE AND HANDLING

A. Delivery: Deliver to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name, manufacturer, and installation location.

B. Storage/Handling: Store products above the floor and under cover in a clean, dry area until installation. Protect materials and finish from damage during handling and installation.

1.07 SITE CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's recommended limits.

1.08 WARRANTIES

A. Material Workmanship: Provide manufacturer's standard 5 year warranty.

B. Exterior Fiberglass Color Change: Provide manufacturer's standard 10 year warranty.

C. Fiberglass Fiberbloom: Provide manufacturer’s standard 20 year warranty.

D. Metal Finishes: 50% Kynar® Paint: Provide manufacturer's standard 5 year / optional 10 year warranty.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design Manufacturer:
Major Industries Inc., 7120 Stewart Ave, Wausau, WI 54401
Contact: Charlie Kennedy, Collier Building Specialties, (415) 467-9235 x130.

B. Acceptable manufacturers for approval include: Kalwall; or approved equal.

2.02 TRANSLUCENT SKYLIGHTS

A. Basis of Design fiberglass sandwich panel skylight system, and associated products and accessories:

1. Guardian 275® Translucent Skylight System; or approved equal.

2.03 DESIGN / PERFORMANCE REQUIREMENTS

A. Performance Requirements:

1. Framing Members: Sufficient sizes required to support design loads.

2. Deflection Limits: Shall not exceed L/60 per IBC code requirements.

3. Safety Factors: Allowable stresses shall incorporate the following safety factors, unless otherwise specified:

a. Load Carrying Members: 1.65
b. Load Carrying Fasteners: 2.0

4. Expansion and Contraction: Design and install components with provisions for expansion and contraction due to a 100 degree F (56 degrees C) temperature variation.

5. Design Loads: Framing components shall be designed to support following loads:

    a. Live Load / Wind Load: 0 PSF (interior installation, not exposed to exterior elements)

2.04 COMPONENTS

A. Translucent Panel Units:

1. Construction: Facings of ICC ES listed architectural-grade fiberglass reinforced polymer sheets bonded under controlled heat and pressure to a mechanically-interlocked aluminum I-beam grid core to form double-faced, self-supporting, structural composite sandwich panels.

    a. Thickness: 2-3/4 inches (699 mm).

    b. Panel Size: 4 feet wide x 20 feet long

    c. Total Panel Count: 7

    d. U-Factor: Center of Panel U-factor (for glazing comparison only).

        a. 2-3/4 inch: 0.48 (No insulation).

    e. Grid Pattern: In-line Shoji (12 inch x 24 inch maximum grid size).

    f. Unbonded Areas: Maximum of 4 unbonded areas, a maximum of 3/64 inch
    (.11 mm) in diameter, in an area a maximum of 40 square feet of panel surface.

    g. Panel Corners: Notch and interlock or reinforce with aluminum for radius conditions.

    h. Assembly: Factory assembled. Field assembly of panels not allowed.

2. Physical Properties:

    a. ASTM E 108 - Burning Brand: Class A rating.

    b. ASTM E 72 and E 330 - Uniform Load Deflection.

3. I-Beam Grid Core:

    a. Material: Mechanically interlocked Aluminum Alloy 6061-T6.

    b. 7/16 inch (11 mm) minimum flange width, 0.050 inch (1.27 mm) web thickness.

    c. Full surface contact with face sheets.

4. Adhesive:

    a. Waterproof resin for use in laminating face sheet to aluminum grid core.

b. Impact and Thermal Shock: Adhesive capable of withstanding impact and thermal shock normally encountered in exterior construction.

c. Adhesive Bond Line: Straight, black, cover entire width of I-beam, with neat edge.

d. Initial Adhesive Bond Strength: Shear Strength, ASTM D 1002: 563 psi., Tensile Strength, ASTM C 297: 557 psi minimum.

e. Aged Adhesive Bond Strength, ASTM D 1037: Shear Strength, ASTM D 1002:
1212 psi., Tensile Strength, ASTM C 297: 914 psi.

5. Translucent Face Sheets:

a. Appearance of Face Sheets:

1) Uniform in color to prevent splotchy appearance.

2) Free of ridges, wrinkles, clusters of air bubbles and pinholes.

3) ICC-ES listed (ESR-2855).

b. Exterior Face Sheet:

1) ASTM D 2244: Color change shall not exceed 3.0 Delta E units after 5 years of weathering (accelerated Arizona / simulated South Florida testing).

2) Impact Strength, UL 972 / Thickness:

a) Standard - 70 foot-pounds / 0.070 inches (1.77 mm).

3) Color: Crystal.

c. Interior Face Sheet:

1) Flame Spread, ASTM E 84: 10 maximum.

2) Smoke Development, ASTM E 84: 300 maximum.

3) Burn Rate, ASTM D 635: 1.0 inch per minute maximum.

4) Self-Ignition, ASTM D 1929: Greater than 650 degrees F.

5) Thickness: Standard - 0.045 inches.

6) Color: White.

B. Components and Framing:

1. Aluminum:

a. Extruded Aluminum: ASTM B 221, Alloy 6063-T5/T6, 6061-T5/T6.

b. Formed Aluminum Components and Flashing: ASTM B 209, Alloy 5005-

H34.

c. Minimum Thickness: 0.040 inch.

2. Glazing Gaskets:

a. Factory installed (in extruded dovetail slots) EPDM hybrid, 9/16 inch wide.

b. Compression Deflection, 25% Deflection Limits, ASTM D 1056, 13 to 24 psi.

c. Compression Set, 22 Hours at 158 Degrees F, ASTM D 395, Method B: 30 psi.

d. Heat Aging, 70 Hours at 212 Degrees F, Change in Compression Values, ASTM D 865 and D 1056: 0 to 10 psi.

e. Ozone Resistance at 40% Elongation, 100 Hours at 104 Degrees F, ASTM D 1149: Type I, 1 Ppm Ozone: No cracks / Type II, 3 Ppm Ozone: No cracks.

f. Straining of Surface, ASTM D 925: Non-straining, no migratory strain.

C. Expansion and Contraction: Design and install components with provisions for expansion and contraction due to a 100 degree F temperature variation.

D. Glazing Caps:

1. Extruded aluminum.

2. Attach glazing caps with glazing cap fasteners located at a maximum of 12 inches on center or as required to resist negative loading.

E. Fasteners:

1. Clips for Attachment of Rafter Bars: Aluminum - attach using bolted fastening methods.

2. Construction and Glazing Cap Fasteners: 18-8 stainless steel - include gasketed sealing washers.

3. Field Anchors: Cadmium plated, unless otherwise specified.

4. Exposed Fasteners: Finish to match aluminum.

2.05 FABRICATION

A. Construct skylights of extruded aluminum shapes similar to sections indicated on the Drawings.

2.06 ALUMINUM FINISHES

A. Pigmented Organic Coating: 50% Kynar® / AAMA 2604.

1. Color: Selected from standard non-metallic/non-exotic colors.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine areas to receive translucent skylights with installer and manufacturer's representative present, including supporting structure and substrate for dimensions, tolerances, material conditions, and support.

B. Notify Architect of conditions that would adversely affect installation or subsequent utilization of skylights and do not proceed until conditions are corrected.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Ensure supports to receive skylights are clean, flat, level, plumb, and square.

C. Aluminum Protection: Where aluminum will contact dissimilar materials, apply a coating of bituminous paint or other neutral material or separate with a nonabsorbent isolator.

3.03 INSTALLATION

A. Install skylights level, plumb, square, and accurately aligned, and in accordance with manufacturer's instructions at locations indicated on the approved drawings.

B. Do not install skylight components with deficiencies or dimensional errors. Do not proceed with installation until unsatisfactory components are replaced.

C. Anchor skylights securely to supports using attachment methods that permit adjustment for construction tolerances, irregularities, alignment, and expansion and contraction.

D. Install skylights including flashings, fasteners, hardware, sealants, and glazing materials required for a complete, weatherproof installation.

3.04 CLEANING

A. Clean skylights inside and outside, including member connections and inside corners, immediately after installation and after sealants have cured, but not more than 10 days after installation.

B. Follow related cleaning instructions in accordance with manufacturer's recommendations.

3.05 PROTECTION

A. Protect installed products until completion of scope of work.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

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PART 1 GENERAL

1.01 SUMMARY

A. This Section includes door hardware.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Product Data: Submit product data including installation details, material descriptions, dimensions of individual components and profiles, and finishes.

C. Shop Drawings: Submit shop drawings with details of door hardware:

D. Samples: Submit samples of exposed door hardware for each type indicated below, in specified finish. Tag with full description for coordination with the Door Hardware Schedule.

1. Door Hardware: As follows:

a. Locks and latches.

b. Operating trim.

2. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated into the Work, within limitations of keying requirements.

E. Door Hardware Schedule: Submit door hardware schedule prepared by or under the supervision of door hardware supplier. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware. The Architect’s review of schedule shall neither be construed as a complete check nor shall it relieve the Contractor of responsibility for errors, deviations, or omissions from the specified requirements to provide complete door hardware for the project.

1. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening.

a. Organize door hardware sets in same order as in the Door Hardware Schedule at the end of Part 3.

2. Content: Include the following information:

a. Type, style, function, size, label, hand, and finish of each door hardware item.

b. Manufacturer of each item.

c. Fastenings and other pertinent information.

d. Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.

e. Explanation of abbreviations, symbols, and codes contained in schedule.

f. Mounting locations for door hardware. Supply templates to door and frame manufacturer(s) to enable proper and accurate sizing and locations of cutouts for hardware. Detail any conditions requiring custom extended lip strikes, or any other special or custom conditions.

g. Door and frame sizes and materials.

F. Warranties: Submit special warranties specified in this Section.

G. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, removal and replacement of door hardware. Written verification and testing results for door operating pressures.

H. Installation Instructions: Provide manufacturer's installation instructions for each type of hardware item for owner's maintenance at completion of work.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Supplier Qualifications: Door hardware supplier, who has completed a minimum of three (3) projects over the last 5 years which were similar in material, design and extent to that indicated for the project - as determined by the Architect – and which have resulted in construction with a record of successful in service performance, and who is or employs a qualified Architectural Hardware Consultant, available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.

C. Architectural Hardware Consultant Qualifications: A person who is currently certified by the Door and Hardware Institute as an Architectural Hardware Consultant and who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project.

D. Source Limitations: Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.

E. Regulatory Requirements: Comply with the following:

1. Provide hardware items complying with the applicable provisions for accessibility and usability by the disabled and handicapped in compliance with Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG).”

2. NFPA 101: Comply with applicable provisions for means of egress doors.

F. Keying Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including, but not limited to, the following:

1. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.

2. Preliminary key system schematic diagram.

3. Address for delivery of keys.

G. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to electrified and mechanical door hardware including, but not limited to, the following:

1. Inspect and discuss electrical roughing-in and other preparatory work performed by other trades.

2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

3. Review required testing, inspecting, and certifying procedures.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule and include basic installation instructions with each item or package.

1.06 COORDINATION

A. Templates: Furnish templates and door hardware schedules, coordinated for the application of door hardware items with door and frame details, to door opening fabricators and trades performing door opening work to permit the preparation of doors and frames to receive the specified door hardware. The fabricated prep and installation shall be in compliance with the lock manufacturer’s recommendations, requirements and templating. Where the door hardware item scheduled is not adaptable to the finished size of door opening members requiring door hardware, submit an item having a similar operation and quality to the Architect for review. Each door hardware item shall be fabricated to templates.

1.07 WARRANTY

A. Special Warranty: Written warranty, executed by manufacturer agreeing to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, the following:

1. Faulty operation of door hardware.

2. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

PART 2 PRODUCTS

2.01 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in this Section, door hardware sets are keyed to each scheduled door in the door and frame schedule, and the Door Hardware Schedule at the end of Part 3.

1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturer's products.

2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.

3. The hardware supplier shall review each hardware set and compare it with the door types, details, and sizes as shown and verify each hardware item for function, hand, backset, and method of fastening through shop drawing submittals.

2.02 HINGES AND PIVOTS

A. Butt Hinge Products and Manufacturers:

1. Standard Weight, Ball Bearing, 5 Knuckle, Steel: Complying with BHMA A156.1 A8112, one of the following:

a. BB5000; Bommer Industries, Inc. (BI).

b. BB1279; Hager Companies (HAG).

c. TA2714; McKinney Products Company (MCK).

d. FBB179; Stanley Commercial Hardware (STH).

2. Heavy Weight, Ball Bearing, 5 Knuckle, Steel: Complying with BHMA A156.1 A8111, one of the following:

a. BB5004; Bommer Industries, Inc. (BI).

b. BB1168; Hager Companies (HAG).

c. T4A3786; McKinney Products Company (MCK).

d. FBB168; Stanley Commercial Hardware (STH).

3. Heavy Weight, Ball Bearing, 5 Knuckle, Stainless Steel: Complying with BHMA A156.1 A5111, one of the following:

    a. BB5006; Bommer Industries, Inc. (BI).

    b. BB1199; Hager Companies (HAG).

    c. T4A3386-32D; McKinney Products Company (MCK).

    d. FBB199(US32D); Stanley Commercial Hardware (STH).

4. Heavy Weight, Ball Bearing, 5 Knuckle, Steel, Concealed Electric 24V, 4 Wire: Complying with BHMA A156.1 A8111, one of the following:

    a. BB5064 (ETW04); Bommer Industries, Inc. (BI).

    b. BB1168 x ETW-4; Hager Companies (HAG).

    c. T4A3786 x CC-4; McKinney Products Company (MCK).

    d. CEFBB168-54; Stanley Commercial Hardware (STH).

5. Heavy Weight, Ball Bearing, 5 Knuckle, Stainless Steel, Concealed Electric 24V, 4 Wire: Complying with BHMA A156.1 A5111, one of the following:

    a. BB5066 (ETW04); Bommer Industries, Inc. (BI).

    b. BB1199 x ETW-4; Hager Companies (HAG).

    c. T4A3386-32D x CC-4; McKinney Products Company (MCK).

    d. CEFBB199(US32D)-54; Stanley Commercial Hardware (STH).

6. Standard Weight, Ball Bearing, 5 Knuckle, Steel, Concealed Electric 24V, 4 Wire: Complying with BHMA A156.1 A8112, one of the following:

    a. BB5060 (ETW04); Bommer Industries, Inc. (BI).

    b. BB1279 x ETW-4; Hager Companies (HAG).

    c. TA2714 x CC-4; McKinney Products Company (MCK).

    d. CEFBB179-54; Stanley Commercial Hardware (STH).

B. General Hinge Characteristics: Where door jamb or trim projects to such an extent that the width of leaf specified will not allow the door to clear such frame or trim, furnish hinges and pivots with leaves of sufficient width to clear. Hinges and pivots shall be template hinges conforming to BHMA A156.1 and in accordance with door and frame material requirements.

C. Butt Hinge Quantity: Provide the following, unless otherwise indicated:

1. Two Hinges: For doors with heights up to and including 60 inches (1524 mm).

2. Three Hinges: For doors with heights of greater than 60 inches (1524 mm) to and including 90 inches (2286 mm).

3. Four Hinges: For doors with heights greater than 90 inches (2286 mm) to and including 120 inches (3048 mm).

4. Provide 4 hinges, plus 1 hinge for every 30 inches (750 mm) of door height greater than 120 inches (3048 mm).

D. Butt Hinge Sizes: 4-1/2 inches (114 mm) h. by 4 inches (102 mm) or 4-1/2 inches (114 mm) w. for doors up to and including 36 inches (914 mm) in width; 5 inches (127 mm) h. by 4 inches (102 mm) or 4-1/2 inches (114 mm) w. for doors greater than 36 inches (914 mm) in width.

E. Hinge Characteristics: Full mortise type with square corners. All butt hinges are to have nonrising pins for interior hinges and all exterior butt hinges are to be made of non-ferrous base metal. Hinges at all locked outswinging doors shall have non-removable pins (NRP). Provide only steel bodied butt and pivot hinges at labeled doors. All butt hinges shall be furnished with button tips.

F. Electrified Functions for Hinges: Furnish fully concealed circuit, tamper resistant, wired hinges at doors requiring power transfer or door monitoring from jamb to door. Furnish junction box and mortar shield for use with each wired hinge and ship directly to the door and frame manufacturer(s) for fastening to frame.

G. Fasteners: Package all hinges and pivots with machine and wood screws as required by door and frame construction.

2.03 LOCKS AND LATCHES

A. Mortise Lock and Latch Sets: Heavy duty, commercial, mortise bodies complying with BHMA A156.13 Series 1000, Grade 1, with through-bolted lever trim. Furnish mortise type, field reversible, lock and latch sets with 1 or 2 piece anti-friction deadlocking brass or stainless steel latch-bolts having a minimum 3/4 inch (19 mm) throw, 2-3/4 inches (70 mm) backset, and UL listed for 3 hour doors. All lock and latch sets, to be furnished complete with heavy gage wrought steel zinc dichromate or chrome plated case, trim, adjustable beveled square cornered armored fronts, steel or stainless steel hubs, and 6 pin Best cylinders. Conceal fastenings, washers and bushings. Provide wrought, or black plastic, box strikes for each lock and latch set with curved lips of sufficient length to protect frames. Provide solid forged or cast levers with wrought roses. Where lock functions are scheduled provide non-handed guard bolt and stainless steel deadbolt with a minimum 1 inch (25 mm) throw. Where electro-mechanical locksets are scheduled provide transformers properly sized for conversion of power supply to the power characteristics of the electromechanical locksets. Use Schlage L mortise locks, Best6 pin cylinders. Trim will be cast stainless steel with antimicrobial finish unless otherwise specified.

1. Schlage L9000 Series, 17 Design x A Rose; Schlage Lock Company (SCH). Provide handed ANSI 4-7/8” curved lip strikes die punched to match bolts provided with latch-set functions only (Part No. XL11-820/XL11-821), provide non-handed standard curve lip strikes for all other functions 10-072. Where electro-mechanical locksets are scheduled provide L9000EL Series with trim matching mechanical locksets. Touch pads only on Exit Devices. No crossbar arm designs.

2.04 ELECTROMAGNETIC LOCKS

A. Exposed, Surface Applied Type: Surface mount application with a minimum 1650 pound holding force at 24 V, provide complete with all cabling, rectifier kits, holding force sensors, adjustable time delay, and mounting hardware, complying with BHMA A156.23, Grade 1, high security, fail-safe operation.

1. Magnalock Model M62B; Securitron (SEC).

2.05 DOOR BOLTS

A. Manual Flush Bolts: Provide flush bolts, with 1" wide fronts, in paired sets (top and bottom), with 1/2" diameter flattened bolt tip and standard 12" rod. Flush bolts shall fit ANSI A115.4 door and frame preparation. Flush bolts in wood and metal fire doors shall be A Label UL Listed. Bolts for fire doors to comply with BHMA A156.16, Type L14081, L14251 or L24081. Furnish rods of proper length to afford easy reach from the floor. Furnish manufacturers standard top strikes for top bolts.

1. Manual Flushbolts for Fire Rated Wood Doors: One of the following:

a. No. 790F; Door Controls International (DCI).

b. FB358; Ives: H. B. Ives (IVS).

c. 3913; Triangle Brass Manufacturing Company, Inc. (TBM).

d. 557; Rockwood Manufacturing Company (RM).

2. Manual Flushbolts for Fire Rated Metal Doors: One of the following:

a. No. 780F; Door Controls International (DCI).

b. FB458; Ives: H. B. Ives (IVS).

c. 3917; Triangle Brass Manufacturing Company, Inc. (TBM).

d. 555; Rockwood Manufacturing Company (RM).

B. Self-Latching Flush Bolt Assemblies for Metal Fire Doors: BHMA A156.3, Type 27; one of the following:

1. No. 845 (805 top bolt x 840 automatic bottom bolt); Door Controls International (DCI).

2. FB51P (FB51T constant latching top bolt x FB31B automatic bottom bolt; Ives: H. B. Ives (IVS).

3. 3820 (3820 x 3810); Triangle Brass Manufacturing Company, Inc. (TBM).

4. 1845 automatic flush bolt x constant self-latching top bolt; Rockwood Manufacturing Company (RM).

2.06 EXIT DEVICES

A. Exit Devices: Exit devices and exit device accessories shall conform to BHMA A156.3, Grade 1. Trim shall be wrought construction and commercial plain design with straight,

beveled or smoothly rounded sides, corners and edges. Keyed devices shall be furnished less cylinders. Cylinders shall be as herein specified keyed to building system.

B. Push Pad Style Exit Devices:

1. 98 series Function with Schlage Lever 17A and Trim as Scheduled Von Duprin in 630 (US32D) with antimicrobial finish. No substitutions.

C. Panic Exit Devices: Listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.

D. Fire Exit Devices: Complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire and panic protection, based on testing according to UL 305 and NFPA 252.

E. Outside Trim: Match design for locksets and latchsets, unless otherwise indicated. Adjustable strikes provided for Rim and Vertical Rod Exit Devices. Exit Devices shall be installed with proprietary 32 series Medeco, I/C cylinders and cores

2.07 CYLINDERS AND KEYING

A. Cylinders: Full faced interchangeable core cylinders with square shouldered (not tapered) compression rings, 6 pin cylinders, standard threaded, keyed into building system, with cams to suit lock functions. Provide cylinders for installation into all locks and key-operated electrical switching devices keyed to the instructions by the Best.

B. Keying System: Final keying to determine lock cylinders, keyed alike sets, level of keying, master key groups, grandmaster keying system shall be as directed by the Owner. Supplier and Contractor shall meet with the Owner and obtain final instructions in writing.

1. Construction Keyed Cylinders: Provide construction keyed cylinders in locks during construction and as may be necessary for security or as may be requested by the Owner. Upon completion of the construction phase, construction keyed cylinders shall be voided mechanically without removal of the cylinder housing from the locks. All construction keyed cylinders shall be individually keyed as required.

2.08 STRIKES

A. Strikes for Locks and Latches: All strikes for locks and latches shall be provided by the lock and latch manufacturer unless otherwise specified or scheduled, refer to Article ‘Locks and Latches’.

B. Dustproof Floor Strikes: Complying with BHMA A156.16, Type L04251 or L14021, one of the following:

1. No. 80; Door Controls International.

2. DP2; H.B. Ives.

3. 3910; Triangle Brass Manufacturing Company, Inc. (TBM).

4. 570 x 571; Rockwood Manufacturing Company (RM).

C. Dustproof Threshold Strikes: Complying with BHMA A156.16, Type L2402X or L14011, one of the following:

1. No. 81; Door Controls International.

2. DP1; H.B. Ives.

3. 3911; Triangle Brass Manufacturing Company, Inc. (TBM).

4. 572; Rockwood Manufacturing Company (RM).

2.09 OPERATING TRIM (PUSHES AND PULLS)

A. Types as scheduled on Door Hardware Schedule.

2.10 ACCESSORIES FOR PAIRS OF DOORS

A. Tubular Coordinators and Filler Bars: UL listed for use on labeled doors and complying with BHMA A156.3, Type 21A. Provide with filler piece of length as required to close the header area and mounting brackets at stop mounted hardware. Furnish extenders at active leaf levers where required to clear overlapping astragals on doors installed with pocket pivot hinges or jambs with deep jamb stops.

1. No. 600 Series x Filler Bar; Door Controls International (DCI).

2. COR Series Coordinators x FL filler; H. B. Ives (IVS).

3. 1600 Series; Rockwood Manufacturing Company (RM).

B. Coordinator Brackets: UL listed for use on labeled doors and complying with BHMA A156.3, Type 21B. Minimum 7-inch (178-mm) projection.

1. No. 500 Coordinator; Door Controls International (DCI).

2. CORG7; H. B. Ives (IVS).

3. 576; Rockwood Manufacturing Company (RM).

C. Carry Open Bars: UL listed for use on labeled doors and complying with BHMA A156.3, Type 21. Provide carry-open bars for inactive leaves of pairs of doors, unless automatic or self-latching bolts are used.

1. No. CB Carry Bar; Door Controls International (DCI).

2. CB1 Carry Bar; H. B. Ives (IVS).

3. 1100; Rockwood Manufacturing Company (RM).

D. Astragals: UL listed for use on labeled doors, surface applied continuous extruded aluminum minimum 7/8" wide retaining EPDM gaskets for installation on both sides of all meeting stiles of doors:

1. 125NA; National Guard Products, Inc. (NGP).

2. 305CN; Pemko Manufacturing Co., Inc. (PEM).

3. WS235; Ultra Industries; a Macklanburg-Duncan Company (ULT).

E. Lock Protectors: Fabricated from heavy gauge metal and in finish as scheduled. Fabricate lock protectors with no exposed fasteners on face of lock protector. Furnish protectors sized to cover the latch bolt area of the door and lock and narrow enough to clear rose and escutcheon lock trims, offset formed to clear strike projection. Machine lock protectors where required to accommodate rose and escutcheon trims, and cylinders.

1. LG Series Lock Guards; H. B. Ives (IVS).

2.11 CLOSERS

A. Surface-Mounted Closers: Closers shall be certified by ETL laboratories and the manufacturer to a minimum of 8,000,000 cycles and meet BHMA A156.4, Grade 1. Closers shall be warranted by the manufacturer against defects in materials and workmanship for a minimum of 10 years. Closers used in conjunction with overhead stops and holders shall be templated and coordinated to function properly. Properly detail closers to meet application requirements by providing drop plates, brackets, etc. to meet application and installation requirements as indicated. Comply with manufacturers recommendations for size of door closer depending on size of door, stack pressure conditions, exposure to weather, and anticipated frequency of use. Closers shall have adjustable spring power, full rack and pinion, independent closing speed and latch regulating V-slotted valves, fully hydraulic with a high strength cast iron cylinder and solid forged steel arms, bore diameter of 1-1/2”, pinion shaft diameter of 5/8”, adjustable back check, cushion and built-in stop feature where scheduled, hold open arms where scheduled, delayed action where scheduled, arm finish to match closer cover finish scheduled. Provide metal covers of clean line design with plated or primed for paint finish as scheduled and that require removal in order to make adjustments to closer.

1. 4111/4011; LCN Closers (LCN).

2. 4041: LCN Closers (LCN).

3. 2030 series concealed in aluminum storefront; LCN Closers (LCN).

2.12 PROTECTIVE TRIM UNITS

A. Kick and Armor Plates: Fabricate protection plates from minimum 0.050 inch (1.3 mm) thick stainless steel, beveled top and 2 sides (B3E), square corners, complying with BHMA A156.6, and fastened with oval head Phillips fasteners countersunk into plate surface.

1. Series 8400; Ives: H. B. Ives (IVS).

2. K1050 Doorplate Series; Rockwood Manufacturing Company (RM).

3. KA050-2 Armor Plate and KOO50 for Kickplates; Triangle Brass Manufacturing Company, Inc. (TBM).

B. Size: Furnish kick and armor plates sized 2 inches (51 mm) less than door width. Furnish kickplates in 12 inches (305 mm) heights, furnish armor plates in 48 inches (1219 mm) heights unless otherwise indicated. Provide protective plates with cutouts for locks, louvers and windows to the extent indicated. Mount protective plates flush with bottom of door.

2.13 STOPS AND HOLDERS

A. Concealed Overhead Door Holders: Heavy duty, concealed mounting, full mortised, bronze bodied, slide track design, with heavy shock absorber spring providing 5 to 7 degree compression before dead-stop, non-metal slide and shock blocks, 110 degree maximum opening, complying with BHMA A156.8 Type C11511 for hold open and Type C11541 for stop function. Provide stop, or hold open, functions as scheduled.

1. 1000 Series; Architectural Builders Hardware Mfg., Inc. (ABH).

2. 100 Series; Glynn-Johnson (GJ).

3. Checkmate Heavy Duty 1 Series; Rixson-Firemark, Inc. (RIX).

B. Exposed Overhead Door Holders: Heavy duty, surface mounted, bronze bodied, slide track design, with heavy shock absorber spring providing 5 to 7 degree compression before dead-stop, non-metal slide and shock blocks, 110 degree maximum opening, complying with BHMA A156.8 Type C12511 for hold open and Type C12541 for stop function. Provide stop, or hold open, functions as scheduled.

1. 9000 Series; Architectural Builders Hardware Mfg., Inc. (ABH).

2. 90 Series; Glynn-Johnson (GJ).

3. Checkmate Heavy Duty 9 Series; Rixson-Firemark, Inc. (RIX).

C. Electromagnetic Door Hold Opens for Labeled Fire and Smoke Door Assemblies: Provide each electromagnetic door hold open with fail-safe operation, concealed wiring, door mounted contact plates with concealed mounting fasteners, shims, extensions, and installed approximately 6 inches in from lock edge of door. Comply with BHMA A156.15 for wall mounted single unit, water resistant floor mounted single unit, water resistant floor mounted double unit for back to back mounting to the extent indicated. Coordinate voltage and current characteristics with power supplied to holders, in addition coordinate with fire detectors and interface with fire alarm system.

1. Wall Mounted Single Unit – Low Profile:

a. Model 989; Rixson-Firemark, Inc. (RIX).

b. Model 2100 with #20100 1" extension; Architectural Builders Hardware Mfg., Inc. (ABH).

D. Silencers for Metal Door Frames: BHMA A156.16, Type L03011; grey rubber, minimum diameter 1/2 inch (13 mm); fabricated for drilled-in application to frame, specifically designed to form an air pocket to absorb shock and reduce noise of door closing. Provide 2 silencers for each pair of doors, 3 silencers for each single door.

1. 8S; Door Controls International (DCI).

2. SR64; H. B. Ives (IVS).

3. 1229A; Triangle Brass Manufacturing Company, Inc. (TBM).

4. 608; Rockwood Manufacturing Company (RM).

E. Wall Stops: Cast disc type with concave rubber bumper, having a 2-1/2 inch (63.5 mm) diameter base with nominal 1 inch (25 mm) projection and concealed attachment to substrate.

1. For Attachment to Masonry: Complying with BHMA A156.16, Type L12251 or L12101.

a. WS401CCV, WS407CVX; H.B. Ives (IVS).

b. 1276CCS; Triangle Brass Manufacturing Company, Inc. (TBM).

2. For Attachment to Gypsum Wallboard: Complying with BHMA A156.16, Type L12251 or L12101.

a. WS402CCV, WS407CVX; H.B. Ives (IVS).

b. 1274CCS; Triangle Brass Manufacturing Company, Inc. (TBM).

2.14 DOOR GASKETING

A. Type 1: Self-adhesive flexible silicone type, continuous gaskets for installation at all heads and jambs of doors:

1. 5050C; National Guard Products, Inc. (NGP).

2. S88BL; Pemko Manufacturing Co., Inc. (PEM).

3. 188BK; Zero International, Inc. (ZRO).Type

B. Type 2: Self-adhesive flexible silicone type, continuous gaskets for installation at all heads and jambs of doors, extruded aluminum automatic door bottoms with two lines of flexible, silicone type, continuous gaskets for mortised installation at door bottoms.

1. 5050C x 320S automatic door bottom; National Guard Products, Inc. (NGP).

2. S88BL x 420ASL automatic door bottom; Pemko Manufacturing Co., Inc. (PEM).

3. WS108BL x DB044 automatic door bottom; Ultra.Thresholds.

C. Smoke Gasket:

Self-adhesive flexible silicone type, continuous gaskets for installation at all heads and jambs of doors:

1. 5050C; National Guard Products, Inc. (NGP).

2. S88BL; Pemko Manufacturing Co., Inc. (PEM).

3. 188BK; Zero International, Inc. (ZRO).Types

D. Perimeter Gasket:

Rigid jamb weatherstrip seals gaps to reduct sound infiltration, continuous gaskets for installation at all heads and jambs of door.

1. 303_S (PG) Standard Perimeter Gasketing; Pemko Manufacturing Co., Inc. (PEM).

2.15 MISCELLANEOUS DOOR HARDWARE

A. Boxed Power Supplies: Modular unit in NEMA ICS 6, Type 4 enclosure; filtered and regulated; voltage rating and type matching requirements of door hardware served; and listed and labeled for use with fire alarm systems.

2.16 FABRICATION

A. Manufacturer's Nameplate: Provide each door hardware item without exposed manufacturers labels, names, or designs.

B. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturer’s specified fastener for each application intended. Provide Phillips oval-head screws with finished heads to match surface of door hardware item being attached. Machine screws and expansion shields shall be used for attaching hardware to concrete and masonry. Use through-bolts for renovation work only where existing door blocking and reinforcements are unknown.

1. Concealed Fasteners: All new doors and door frames have been specified with adequate blocking and reinforcement provisions to eliminate exposed through-bolting of hardware items. Doors installed with exposed through-bolts will be rejected and replaced by the Contractor at no cost to the Owner. Where through bolts are used on existing doors provide sleeves for each through bolt.

2.17 FINISHES

A. Standard: Comply with BHMA A156.18.

B. Appearance of Finished Work: Finishes of the same designation, that come from 2 or more sources, shall match when the items are viewed at arms-length and approximately 2' apart. Unless otherwise scheduled, match each hardware item in a single hardware set with the scheduled latch or lock set finish. Painting of BHMA 600 (USP) surfaces is required and is specified under Division 09 Section “Painting.”

C. Designations: The abbreviations used to schedule hardware finishes are generally BHMA (Federal Standards where indicated in parenthesis) designations. Comply with base material and finish requirements indicated by the following:

1. BHMA 600 (USP): Primed for painting.

2. BHMA 626 (US26D): Satin chromium plated.

3. BHMA 628 (US28): Satin aluminum, clear anodized.

4. BHMA 630 (US32D): Satin stainless steel.

5. Alum.: Aluminum.

2.18 DOOR SIGNAGE

A. Adhesive Sign - Self adhesive – Poste on egress size of door vertically on frame as required by CBC. ‘THIS DOOR TO REMAIN UNLOCKED WHEN THIS SPACE IS OCCUPIED”.

2.19 SECURITY HARDWARE

A. HID Global Door Access Control Systems.

1. Card Readers: ProPro II 5455, Mini 5365 at mullions

2. Controller VertX EVO V1000 Network Controller

3. Door Position Sensors

PART 3 EXECUTION

3.01 INSTALLATION

A. Mounting Heights: Mount door hardware units at the following heights, unless specifically indicated on the drawings or required to comply with governing regulations. Accessible hardware must e centered between 34” and 44” above finish floor per accessibility requirements:

1. Locks and Latches: 38 inches to center of lever from finish floor.

2. Door Pulls: 34 inches from finish floor to center of grip. Pull bases centered on door stiles, unless otherwise indicated.

3. Door Pulls: Pull bases centered on top and bottom door rails and spaced from lock edge of door stile as indicated, or recommended, by the pull manufacturer.

4. Push Plates: 40 inches from finish floor to center of plate. Coordinate with pull location.

5. Butt Hinges: 10 inches to bottom of lowest hinge from finish floor; 5 inches to top of upper hinge from top of door; space intermediate hinges equally between lower and upper hinges.

6. Deadbolts: Not more than 44 inches from finish floor to operating trim.

B. Install each door hardware item to comply with manufacturer's written instructions. Install overhead surface closers for maximum degree of opening obtainable. Place on room side of corridor doors, stair side of stair doors, secondary corridor side of doors between corridors. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be finished, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Section 09 90 00 “Paint”. Do not install surface-mounted items until finishes have been completed on substrates involved.

C. Do not install permanent key cylinders in locks until the time of preliminary acceptance by the Owner. At the time of preliminary acceptance, and in the presence of the Owner's representative, permanent key all lock cylinders. Record and file all keys in the key control system specified, and turn system over to Owner for sole possession and control.

D. Thresholds: Thresholds shall be secured with a minimum of 3 fasteners per single door width and 6 fasteners per double door width with a maximum spacing of 12 inches. Minimum screw size shall be No. 10 length, dependent on job conditions, with a minimum of 3/4 inch thread engagement into the floor or anchoring device used. Screw heads to be countersunk and flush with face of threshold. Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Section 07 09 00 "Joint Sealants".

3.02 ADJUSTING

A. Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every hardware component. Replace hardware components that cannot be adjusted to operate as intended.

B. Adjust and check each door closer. The maximum effort to operate doors shall not exceed 5 pounds for exterior and interior doors per code.

3.03 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation. Clean hardware components as necessary to restore proper finish. Provide protection during the progress of the work and maintain conditions that ensure door hardware is in perfect working order and without damage or deterioration at time of Substantial Completion.

3.04 DOOR HARDWARE SCHEDULE – SCHEDULED DOORS

A. Door Hardware Schedule follows at end of this Section.

DOOR HARDWARE

The Owner is seeking best bid on items specified. Any questions or concerns regarding the items or equals specified must be brought to the attention of the Owner's Representative before bid submittal. Owner will make all final decisions regarding the products to be used. If, after bid acceptance, Contractor presents hardware items that are not named equals, there may be a charge to the Contractor for evaluation of those products.

Hinge quantity will vary with size of door; follow manufacturer's recommendations. Hinges on all Exterior Doors to be nonferrous stainless-steel material and have non-removable pins.

All cylinders to be full-faced interchangeable core cylinders with square shouldered (not tapered) compression rings, 6 pin, standard threaded, keyed into the Owner's standard, with cams to suit lock functions. Provide cylinders for installation into all locks.

HARDWARE GROUPS

GROUP #1

1 1/2 Pair Butts	BB1279	Hager
1 Lockset	F07 (storage function)	Schlage
1 Cylinder	to match system	Best
1 Closer	4041	LCN
1 Kickplate	K1050 12" bevel 4 sides	Rockwood
1 Wall Stop	WS407CCV	Ives
3 Mutes	SR64	Ives

GROUP #2 (Sliding Door)

***Security Door Hardware – Group 2**
1 Door Contact
1 Card Reader
1 Power Supply

GROUP #3

1 1/2 Pair Butts	BB1279	Hager
1 Lockset	F04 (office function)	Schlage
1 Cylinder	to match system	Best
1 Wall Stop	WS407CVX	Ives
3 Mutes	SR64	Ives

GROUP #4

1 1/2 Pair Butts	BB1279	Hager
1 Lockset	F02 (privacy) W “Occupied” indicator and “EZ” thumb turn	Schlage
1 Cylinder	to match system	Best
1 Wall Stop	WS407CCV	Ives
3 Mutes	SR64	Ives

GROUP #5 (Exterior Door)

1 1/2 Pair Butts	BB1279	Hager
1 Lockset	F07 (storage function)	Schlage
1 Cylinder	to match system	Best
1 Closer	4041	LCN
1 Kickplate	K1050 12” bevel 4 sides	Rockwood
1 Overhead Stop	90 Series	GJ
1 Perimeter Gasket	303AS	Pemko
1 Drip Cap	346C	Pemko
1 Threshold	14/1A	Pemko
1 Sill Sweep		
1 Latch Guard	321	Rockwood
3 Mutes	SR64	Ives

GROUP #6

1 1/2 Pair Butts	BB1279	Hager
1 Lockset	F01 (passage function)	Schlage
1 Closer	4041	LCN
1 Kickplate	K1050 12” bevel 4 sides	Rockwood
1 Wall Stop	WS407CVX	Ives
3 Mutes	SR64	Ives
1 Perimeter Gasket	303AS	Pemko

GROUP #7 (Exterior Door)

1 1/2 Pair Butts	BB1279	Hager
1 Lockset	F07 (entrance function)	Schlage
1 Cylinder	to match system	Best
1 Closer	4041	LCN
1 Kickplate	K1050 12” bevel 4 sides	Rockwood
1 Overhead Stop	90 Series	GJ
1 Perimeter Gasket	303AS	Pemko

1 Drip Cap	346C	Pemko
1 Threshold	14/1A	Pemko
1 Sill Sweep		
1 Latch Guard	321	Rockwood
3 Mutes	SR64	Ives

GROUP #8

1 1/2 Pair Butts	BB1279	Hager
1 Lockset	F04 (office function)	Schlage
1 Cylinder	to match system	Best
1 Closer	4041	LCN
1 Kickplate	K1050 12” bevel 4 sides	Rockwood
1 Wall Stop	WS407CVX	Ives
3 Mutes	SR64	Ives

GROUP #9

1 1/2 Pair Butts	BB1279	Hager
1 Lockset	F20 (entrance function)	Schlage
1 Cylinder	to match system	Best
1 Wall Stop	WS407CVX	Ives
3 Mutes	SR64	Ives

GROUP #10

1 1/2 Pair Butts	BB1279	Hager
1 Lockset	F07 (storage function)	Schlage
1 Cylinder	to match system	Best
3 Mutes	SR64	Ives

GROUP #11 (Exterior Door)

1 1/2 Pair Butts	BB1279	Hager
1 Lockset	F07 (storage function)	Schlage
1 Cylinder	to match system	Best
1 Closer	4041	LCN
1 Kickplate	K1050 12” bevel 4 sides	Rockwood
1 Overhead Stop	90 Series	GJ
1 Perimeter Gasket	303AS	Pemko
1 Drip Cap	346C	Pemko
1 Threshold	14/1A	Pemko
1 Sill Sweep		
1 Latch Guard	321	Rockwood
3 Mutes	SR64	Ives

GROUP #12

1 1/2 Pair Butts	BB1279	Hager
1 Lockset	Fixed outside/free inside	Schlage
1 Electric Strike	6200 Series	Von Duprin
1 Cylinder	to match system	Best
1 Power Transfer Hinge	EPT-10C x SP28 w. connectors	Von Duprin
1 Door Wire Harness	to be determined	Von Duprin
1 Door Contact	2507A	GE Security
1 Closer	4041	LCN
1 Kickplate	K1050 12” bevel 4 sides	Rockwood
1 Wall Stop	WS407CVX	Ives
1 Perimeter Gasket	303AS	Pemko
1 Drip Cap	346C	Pemko
1 Threshold	14/1A	Pemko

1 Latch Guard	321	Rockwood
3 Mutes	SR64	Ives

***Security Door Hardware – Group 12**
1 Door Contact
1 Card Reader
1 Power Supply

GROUP #13

1 1/2 Pair Butts	BB1279	Hager
1 Lockset	F07 (storage function)	Schlage
1 Electric Strike	6200 Series	Von Duprin
1 Cylinder	to match system	Best
1 Wall Stop	WS407CVX	Ives
3 Mutes	SR64	Ives

***Security Door Hardware – Group 13**

1 Door Contact		HID Global
1 Card Reader	Secured Side	
1 Power Supply		

GROUP #14

1 1/2 Pair Butts	BB1279	Hager
1 Lockset	F04 (office function)	Schlage
1 Cylinder	to match system	Best
1 Wall Stop	WS407CVX	Ives
3 Mutes	SR64	Ives

***Security Door Hardware – Group 14**

1 Door Contact		HID Global
1 Card Reader	Secured Side	
1 Power Supply		

GROUP #15
*See Specifications Section 10 22 39 - Folding Glass Partitions for additional information.

1 Lockset	F07 (entrance function)	Schlage
1 Cylinder	to match system	Best

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. This section specifies glass, related glazing materials and accessories. Glazing products specified apply to factory or field glazed items.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 LABELS

A. Temporary Labels:

1. Provide temporary label on each light of glass identifying manufacturer or brand and glass type, quality and nominal thickness.

2. Label in accordance with NFRC (National Fenestration Rating Council) label requirements.

3. Temporary labels shall remain intact until glass is approved by the Owner.

4. Permanent labels:

a. Locate in corner for each pane.

b. Label in accordance with ANSI Z97.1:

1) Tempered glass

2) Organic coated glass

1.04 PERFORMANCE REQUIREMENTS

A. Glass Thickness:

1. Select thickness of exterior glass to withstand dead loads and wind loads acting normal to plane of glass at design pressures calculated in accordance with ASCE 7 and the CBC

2. Test in accordance with ASTM E 1300

3. Thicknesses listed are minimum. Coordinate thicknesses with framing system manufacturers

1.05 SUBMITTALS

A. Manufacturer's Certificates:

1. Certificate on shading coefficient

2. Certificate on "R" value when value is specified

B. Warranty: Submit written guaranty, conforming to General Condition requirements, and to "Warranty of Construction" Article in this Section.

C. Manufacturer's Literature and Data:

1. Glass, each kind required

2. Insulating glass units

3. Glazing cushion

4. Sealing compound

D. Samples:

1. Size: 6 inches by 6 inches

2. Tempered Low-E glass

3. Insulated glass

4. Glass Film

E. Preconstruction Adhesion and Compatibility Test Report: Submit glazing sealant manufacturer's test report indicating glazing sealants were tested for adhesion to glass and glazing channel substrates and for compatibility with glass and other glazing materials.

1.06 MOCK-UP

A. Insulated Tempered Glass: Contractor to provide multiple Mock-Ups to determine new glazing system to match appearance of exterior glazing system.

1. Architect to select final glazing system from mock-ups on site.

2. Mock-Up to be minimum of 12"x12".

1.07 DELIVERY, STORAGE AND HANDLING

A. Delivery: Schedule delivery to coincide with glazing schedules so minimum handling of crates is required. Do not open crates except as required for inspection for shipping damage.

B. Storage: Store cases according to printed instructions on case, in areas least subject to traffic or falling objects. Keep storage area clean and dry.

C. Handling: Unpack cases following printed instructions on case. Stack individual windows on edge leaned slightly against upright supports with separators between each.

1.08 PROJECT CONDITIONS

A. Field Measurements: Field measure openings before ordering tempered glass products. Be responsible for proper fit of field measured products.

1.09 WARRANTY

A. Warranty: Conform to terms of "Warranty of Construction"

1. Insulating glass units to remain sealed for 10 years.

1.010 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this specification to extend referenced. Publications are referenced in text by basic designation only.

B. American Society for Testing and Materials (ASTM):

C794-10	Adhesion-in-Peel of Elastomeric Joint Sealants
C864-05	Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers
C920-11	Elastomeric Joint Sealants
C964-07	Standard Guide for Lock-Strip Gasket Glazing
C1036-06	Flat Glass
C1048-12	Heat-Treated Flat Glass-Kind HS, Kind FT Coated and Uncoated Glass
C1376-10	Pyrolytic and Vacuum Deposition Coatings on Flat Glass
E84-10	Surface Burning Characteristics of Building Materials
E119-10	Standard Test Methods for Fire Test of Building Construction and Material
E413-16	Classification for Rating Sound Insulation
E2190-10	Insulating Glass Unit

C. Code of Federal Regulations (CFR):

16 CFR 1201	Safety Standard for Architectural Glazing Materials; 2010

D. National Fenestration Rating Council (NFRC)

E. Glass Association of North America (GANA):

1. Glass Manual (Latest Addition)

2. Sealant Manual (2009)

F. American Society of Civil Engineers (ASCE):

ASCE 7-16 Wind Load Provisions

PART 2 PRODUCTS

2.01 GL-1: INSULATED TEMPERED GLASS - EXTERIOR DOORS

A. 1–3/16" Laminated Insulating Acoustical Unit

1. ASTM C1048, Kind FT, Type I, Class 1, Quality q3

2. Basis of design unit: Thickness, 6 mm (1/4 inch), Solarban 70XL, Optigray, Low E coated, tempered

a. Contractor to provide multiple Mock-Ups per Section 1.06. Coordinate final selection with Architect.

3. Air space, 13.2 mm (1/2 inch)

4. Thickness, 4.7 mm (3/16 inch), tempered

5. 1.5 mm (0.060 inch) clear thick interlayer PVB

6. Thickness, 4.7 mm (3/16 inch), tempered

7. Performance: VLT 34; SHGC .22, Shading .26, Reflectance 10%, U value-W .29, U value-S .27.

2.02 GL-2: INTERIOR TEMPERED GLASS – STOREFRONT

A. Tempered Glass:

1. ASTM C1048, Kind FT, Type I, Class 1, Quality q3

2. Thickness, 6 mm (1/4 inch), tempered

3. Color: Clear

2.03 GL-3: INSULATED TEMPERED SPANDREL GLASS - EXTERIOR

A. Low-E Insulated Tempered Glass:

1. ASTM C1048, Kind FT, Type I, Class 1, Quality q3 with low emissivity pyrolytic coating having an E of 0.15

2. Basis of design unit: 1-inch insulated unit with exterior pane of (1/4 inch) Vitro Solarban 60 (2) and interior pane of 6mm (1/4 inch) Optigrey tempered glass and 4th surface opacifier with 13.2 mm (1/2 inch) air space

a. Contractor to provide multiple Mock-Ups per Section 1.06. Coordinate final selection with Architect.

2.04 GL-4: INSULATED TEMPERED GLASS - EXTERIOR

A. Low-E Insulated Tempered Glass:

1. ASTM C1048, Kind FT, Type I, Class 1, Quality q3 with low emissivity pyrolytic coating having an E of 0.15

2. Basis of design unit: 1-inch insulated unit with exterior pane of 6mm (1/4 inch) Vitro tempered Solarban 70XL (2) Optigray sputtered and interior pane of 6mm (1/4 inch) clear tempered glass with 13.2 mm (1/2 inch) air space

a. Contractor to provide multiple Mock-Ups per Section 1.06. Coordinate final selection with Architect.

3. Performance: VLT 47; SHGC .24, Shading .28, Reflectance 8%, U value-W .28, U value-S .26.

2.05 ACCESSORIES

A. As required to supplement the accessories provided with the items to be glazed and to provide a complete installation. Ferrous metal accessories exposed in the finished work shall have a finish that will not corrode or stain while in service.

B. Setting Blocks: ASTM C864:

1. Channel shape; having 1/4 inch internal depth

2. Shore a hardness of 80 to 90 Durometer

3. Block lengths: two inches except four to six inches for insulating glass

4. Block width: Approximately 1/16 inch less than the full width of the rabbet

5. Block thickness: Minimum 3/16 inch, sized for rabbet depth, as required

C. Spacers: ASTM C864:

1. Channel shape having a 1/4 inch internal depth

2. Flanges not less 3/32 inch thick and web 1/8 inch thick

3. Lengths: One to one to three inches

4. Shore a hardness of 40 to 50 Durometer

D. Sealing Tapes:

1. Semi-solid polymeric based material exhibiting pressure sensitive adhesion and withstanding exposure to sunlight, moisture, heat, cold, and aging.

2. Shape, size and degree of softness and strength suitable for use in glazing application to prevent water infiltration.

E. Glazing Gaskets : ASTM C864:

1. Soft, closed-cell with locking key for sash key

2. Flanges may terminate above the glazing beads or terminate flush with top of beads.

F. Glazing Sealants: ASTM C920, silicone neutral cure:

1. Type S

2. Class 25

3. Grade NS

4. Shore A hardness of 25 to 30 Durometer

G. Color:

1. Color of glazing compounds, gaskets, and sealants used for aluminum color frames shall match color of the finished aluminum and be non-staining.

2. Color of other glazing compounds, gaskets, and sealants which will be exposed in the finished work and unpainted shall be black.

H. Glass Film:

1. 3M Fasara Glass Finishes. Type and configuration as shown on window elevations and per architect direction. Pressure sensitive adhesive polyester film with pattern.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions:

1. Examine openings for glass and glazing units; determine they are proper size; plumb; square; and level before installation is started.

2. Verify that glazing openings conform with details, dimensions and tolerances indicated on manufacturer’s approved shop drawings.

B. Advise Contractor of conditions which may adversely affect glass and glazing unit installation, prior to commencement of installation: Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. For sealant glazing, prepare glazing surfaces in accordance with GANA-02 Sealant Manual.

B. Determine glazing unit size and edge clearances by measuring the actual unit to receive the glazing.

C. Shop fabricate and cut glass with smooth, straight edges of full size required by openings to provide GANA recommended edge clearances.

D. Verify that components used are compatible.

E. Clean and dry glazing surfaces.

F. Prime surfaces scheduled to receive sealants, as determined by preconstruction sealant-substrate testing.

3.03 INSTALLATION – GENERAL

A. Install in accordance with GANA-01 Glazing Manual and GANA-02 Sealant Manual unless specified otherwise.

B. Glaze in accordance with recommendations of glazing and framing manufacturers, and as required to meet the Performance Test Requirements specified in other applicable sections of specifications.

C. Set glazing without bending, twisting, or forcing of units.

D. Do not allow glass to rest on or contact any framing member.

E. Glaze doors and operable sash, in a securely-fixed or closed-and-locked position, until sealant, glazing compound, or putty has thoroughly set.

F. Tempered Glass: Install with roller distortions in horizontal position unless otherwise directed.

G. Insulating Glass Units:

1. Glaze in compliance with glass manufacturer's written instructions.

2. When glazing gaskets are used, they shall be of sufficient size and depth to cover glass seal or metal channel frame completely.

3. Do not use putty or glazing compounds.

4. Do not grind, nip, cut, or otherwise alter edges and corners of fused glass units after shipping from factory.

3.04 REPLACEMENT AND CLEANING

A. Clean new glass surfaces removing temporary labels, paint spots, and defacement.

B. Replace cracked, broken, and imperfect glass, or glass which has been installed improperly.

C. Leave glass, putty, and other setting material in clean, whole, and acceptable condition.

3.05 PROTECTION

A. Protect finished surfaces from damage during erection, and after completion of work. Strippable plastic coatings on colored anodized finish are not acceptable.

3.06 GLAZING SCHEDULE

A. Tempered Glass:

1. Install in full and half glazed doors unless indicated otherwise.

2. Use clear, tempered glass on interior side lights and doors unless otherwise indicated or specified.

B. Tempered Glass Low E Glass:

1. Install Sealed Edge Unit (SEU) Low-E tempered in exterior pane of dual glazed storefronts.

END OF SECTION

DIVISION 3 – CONCRETE

03 30 00	Cast-In-Place Concrete	Clear Seal

DIVISION 5 – METALS

05 50 00	Metal Fabrications	
	Guard and Rails	See section 09 90 00 below.

DIVISION 6 – WOOD AND PLASTIC

06 40 23	Interior Architectural Millwork		
	Cabinetwork		
		Faces:	Natural Select Cherry, Plain Sliced.
		Stain/Finish:	To match Doors, see spec. section 08 14 00
		Locks:	626 Brushed/Satin Chrome
		Pulls:	626 Brushed/Satin Chrome
	S-1	Countertop:	Manufacturer: Corian Material: Quartz Color/Style: Valente Pearl

DIVISION 7 – THERMAL MOISTURE PROTECTION

07 24 00	Insulation & Finish System (EIFS)	
	Color & Texture:	Provide Architect with options to best match adjacent surfaces. Final selection per Architect selection.
07 62 00	Sheet Metal Flashing and Trims	
	Coping:	Custom: Per Architect Selection
	Flashing and Counter Flashing	Stainless Steel
07 90 00	Joint Sealants	
	Color:	Provide Architect with options to best match adjacent surfaces. Final selection per Architect selection.

DIVISION 8 – DOORS AND WINDOWS

08 11 13	Hollow Metal Doors & Frames	
	Paint:	Per Architect Selection in Section 09 90 00
08 14 00	Wood Doors	
	Interior Flush Door:	Masonite Architectural Series: Aspiro Species: Cherry wood Slice: Plain
	Wood Door Stain:	Masonite Architectural Series: Aspiro

		Stain Color: Stout
08 31 00	Access Doors and Frames	Paint to match adjacent surfaces
08 41 13	Aluminum-Framed Storefronts, including sliding doors and hardware	
	Framing Color:	Anodized Aluminum Dark Bronze
08 42 29	Sliding Automatic Entrances, including door, frame, and hardware	
	Framing Color:	Anodized Aluminum Dark Bronze
08 71 00	Door Hardware	
	Locksets:	US26D, Brushed/Satin Chrome
	Closers:	US26D, Brushed/Satin Chrome
	Butts:	US26D, Brushed/Satin Chrome
	Exit Devices:	US26D, Brushed/Satin Chrome
	Weather-stripping	Aluminum, Dark Bronze
08 80 00	Glazing	
	GL-1: Exterior Doors	Color: Clear
	GL-2: Interior Tempered	Color: Clear

DIVISION 9 – FINISHES

09 30 13	Porcelain Tile	
	CT-1 (floor):	Daltile
	Style:	Emerson Wood
	Color:	EP01 Butter Pecan Plank
	Finish:	Matte
	Shade Variation:	Random (V4)
	Size:	6"x48"
	Thickness:	5/16"
	Joints:	1/8”
	Pattern:	33% running bond
	CT-2 (toilet wall):	Daltile
	Collection:	Linear, Color Wheel Collection - Glazed Ceramic
	Color:	0190, Artic White
	Pattern:	Horizontal, straight stack
	Finish:	Semi-gloss
	Size:	4” x 16”
	Joints:	1/16”
	CT3 (drinking fountain):	Garden State Tile
	Collection:	Slash Collection
	Color:	Slash White W Dots Deco (SLSH1 73W)
	Pattern:	Horizontal, straight stack
	Finish:	Semi-Gloss
	Size:	3”x12”

	Joints:	1/16”
	CT-B (wall base)	Daltile
	Collection:	Linear, Color Wheel Collection - Glazed Ceramic
	Color:	0190, Artic White
	Trim Base:	S44D9 / 4x16
		*Installed @ painted GWB walls only
	Finish:	Semi-gloss
	Size:	4” x 16”
	Joints:	1/16”
	GRT-1 (floor tile grout):	Color: Mapei, 107 Iron or Per Architect’s selection Mold and Mildew resistant
	GRT-2 (wall tile grout):	Color: Mapei, 00 White or Per Architect’s selection Mold and Mildew resistant
09 51 00	Acoustical Ceilings	
	ACT-1:	Armstrong Cirrus, Angled Tegular, 24"x24"x15/16" Color: White finish. NRC 0.70
	ACT-2:	Armstrong Ceramaguard, 24" x 24" x 15/16" square edge. Color: White. NRC 0.70
	Ceiling Grid:	Type1: Exposed Grid, 15/16, Prelude XL Color: Standard White
09 65 00	Resilient Flooring and Base	
	RF-1 (Flooring):	Interface, High performance LVT Collection: Stargazing Collection Product: A017, Scorpio Color: Silverlight Size: 19.6"x19.6" Pattern: Monolithic Thickness: 0.18 inch (4.5 mm)
	RF-2 (Stair Tread/Riser):	Mannington Commercial/Burke Stairway System Collection: Linear Series Style: Visually Impaired Safety Stair Treads Tread Material: Type TP (Thermoplastic Rubber) Riser Material: Type TP (Thermoplastic Rubber) Profile: Linear Nose: Square Color: Rocky 660 ADA Tread Insert: 2” Abrasive Strip, Black
	RF-3 (Rubber flooring @ Stair landing):	Mannington Commercial Collection: Color Anchor Rubber

Style: ColorScape Tile
Material: Thermoset Rubber Tile
Classification: ASTM F1344, Type 1 (A), Grade 1
Thickness: 1/8”
Profile: Sculptured
Color: Rocky 660
Size: 36” x 36”

RB-1 (base): Mannington Commercial
Collection: Edge Effects
Classification: ASTM F1861, Group 1
Type: Type TP (Thermoplastic Rubber)
Style: Etched EEETC
Color: Black 701
Finish: Matte
Thickness: 1/4”
Profile Height: 6"
Profile: Smooth

09 65 19 Static Dissipative Resilient Flooring

SDT-1 (flooring): Armstrong, Static Dissipative Tile
Product Line: Excelon SDT
Construction: Vinyl Composition Tile
Color: Pearl White - 51953
Size: 12” x 12”
Pattern: ¼ turn
Thickness: 1/8 inch (3.2 mm)

09 68 13 Carpet Tile

CPT-1 Interface
Collection: Net Effect Collection
Product: B701, planks
Color: 102893 Caspian
Pattern: Ashlar
Backing: GlasBac

09 90 00 Painting

PT-1 - Ceiling — Sherwin Williams, High Reflective White, SW-7757, Location Number: 256-C1

PT-2 - Interior walls — Sherwin Williams, Pure White, SW-7005, Location Number: 255-C1

PT-3 - Interior Hollow Metal Door Frames, Interior Hollow Metal Doors & Handrails — Sherwin Williams, Caviar, SW-6990, Location Number: 251-C2

PT-4 – Exterior Doors — Sherwin Williams, to match existing Anodized Aluminum Dark Bronze framing OR per architect selection

PT-5 – Exterior Door Frames	Sherwin Williams, to match existing Anodized Aluminum Dark Bronze framing OR per architect selection
PT-6 – Exterior Guard rails & Handrails	Sherwin Williams, to match existing Anodized Aluminum Dark Bronze framing OR per architect selection
PT-7 – Additional accent colors	per Architect selection.
PT-8 – Exterior troweled flat Concrete @ new windows	Sherwin Williams, to match existing paint at smooth concrete adjacent to existing windows
ST-1 – Wood Stain	Masonite Architectural, Aspiro Series Color: Stout

DIVISION 10 – SPECIALTIES

10 14 00	Signage	
	Interior Signage:	
	Background Color:	Beige
	Text Color:	Black
	Exterior Signage:	
	Site Signs:	Per ADA, CBC and Transportation Standards
10 22 39	Folding Glass Partitions	
	Framing Color:	Anodized Aluminum Dark Bronze
10 26 00	Wall Protection	
	Accessories:	Stainless Steel corner guards
	Height:	48” high unless otherwise noted in Drawings
	Finish:	No. 4 Stainless Steel - Satin
10 28 00	Toilet Accessories	
	Accessories:	No. 4 Stainless Steel Satin Finish
	Grab Bars:	Stainless Steel
	Mirror:	Stainless Steel Framing
10 44 13	Fire Extinguisher Cabinets	
	Finish:	Larsen, Architectural Series, Solid Door with vertical engraved letters, #8 Stainless Steel

DIVISION 12 – FURNISHING

Not Used

DIVISION 14 – CONVEYING EQUIPMENT

14 24 00 Elevator

Flooring:	Armstrong, Luxe, A6746
Wall Panel:	Plastic Laminate Color, Wood Grained per Architect selection.
Reveals:	20 ga, match frame finish
Base:	6” high stainless steel, #4 satin
Handrail:	1 1/2” diameter stainless steel, #4 satin, with end caps, 3 sides.
Ceiling:	Nine (9) painted panels per Architect selection with center light.
Lighting:	LED in each panel
Doors:	Stainless steel
Jamb:	Stainless steel

DIVISION 32 – EXTERIOR IMPROVEMENTS

32 17 23 Pavement Markings

Line Paint:	White
ADA Paint:	per CBC

GENERAL NOTES – Schedule for Finishes:

A. See Architectural Finishes Schedule, specifications, and interior elevations for additional finishes information.
B. Miscellaneous metals to be painted per Architect color selection.
C. Paint interior handrails, PT3.
D. Paint interior hollow metal door frames, high gloss, PT3.
E. Paint remaining hollow metal door frames per architect’s selection.

END OF SECTION

PART 1 GENERAL

1.01 DESCRIPTION

A. This section specifies steel studs wall systems, ceiling or soffit suspended or furred framing, wall furring, fasteners, and accessories for the screw attachment of gypsum board, plaster bases or other building boards.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 TERMINOLOGY

A. Description of terms shall be in accordance with ASTM C754, ASTM C11, ASTM C841 and as specified.

B. Underside of Structure Overhead: The underside of structure overhead shall be the underside of the roof/floor construction supported by beams.

C. Thickness of steel specified is the minimum bare (uncoated) steel thickness.

1.04 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Manufacturer's Literature and Data:

1. Studs, runners and accessories.

2. Furring channels.

3. Screws, clips and other fasteners.

C. Shop Drawings:

1. Typical ceiling suspension system.

2. Typical metal stud and furring construction system including details around openings, access panels and corner details.

3. Typical support for external attachments

1.05 DELIVERY, IDENTIFICATION, HANDLING AND STORAGE

A. In accordance with the requirements of ASTM C754.

1.06 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. American Society For Testing And Materials (ASTM)

A123-09.....Zinc (Hot-dip Galvanized) Coatings on Iron and Steel Products

A653/A653M-09 .....Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process

A641-09.....Zinc-Coated (Galvanized) Carbon Steel Wire

C11-10 .....Terminology Relating to Gypsum and Related Building Materials and Systems

C645-09 .....Non-Structural Steel Framing Members

C754-09 .....Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products

C841-03 (R2008) .....Installation of Interior Lathing and Furring

C954-07 .....Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness

E580-09.....Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Moderate Seismic Restraint.

PART 2 PRODUCTS

2.01 PROTECTIVE COATING

A. Galvanize steel studs, runners (track), rigid (hat section) furring channels, "Z" shaped furring channels, and resilient furring channels, with coating designation of G-60, per ASTM A123.

2.02 STEEL STUDS AND RUNNERS (TRACK)

A. ASTM C645, modified for thickness specified and sizes as shown.

1. Use ASTM A653 steel, 0.8 mm (0.0329 inch) thick bare metal (33 mil).

2. Runners same thickness as studs.

B. Provide not less than two cutouts in web of each stud, approximately 300 mm (12 inches) from each end, and intermediate cutouts on approximately 600 mm (24 inch) centers.

C. Doubled studs for openings as shown.

D. Studs 3600 mm (12 feet) or less in length shall be in one piece.

2.03 FURRING CHANNELS

A. Rigid furring channels (hat shape): ASTM C645.

B. Resilient furring channels:

1. Not less than 0.45 mm (0.0179 inch) thick bare metal.

2. Semi-hat shape, only one flange for anchorage with channel web leg slotted on anchorage side, channel web leg on other side stiffens fastener surface but shall not contact anchorage surface other channel leg is attached to.

C. "Z" Furring Channels:

1. Not less than 0.45 mm (0.0179 inch) thick bare metal, with 32 mm (1-1/4 inch) and 19 mm (3/4 inch) flanges.

2. Web furring depth to suit thickness of insulation with slotted perforations.

D. Rolled Steel Channels: ASTM C754, cold rolled; or, ASTM C841, cold rolled.

2.04 FASTENERS, CLIPS, AND OTHER METAL ACCESSORIES

A. ASTM C754, except as otherwise specified.

B. Fasteners for steel studs thicker than 0.84 mm (0.033 inch) thick. Use ASTM C954 steel drill screws of size and type recommended by the manufacturer of the material being fastened.

C. Clips: ASTM C841 (paragraph 6.11), manufacturer’s standard items. Clips used in lieu of tie wire shall have holding power equivalent to that provided by the tie wire for the specific application.

D. Concrete ceiling hanger inserts (anchorage for hanger wire and hanger straps): Steel, zinc-coated (galvanized), manufacturers standard items, designed to support twice the hanger loads imposed and the type of hanger used.

E. Tie Wire and Hanger Wire:

1. ASTM A641, soft temper, Class 1 coating.

2. Gage (diameter) as specified in ASTM C754 or ASTM C841.

F. Attachments for Wall Furring:

1. Manufacturers standard items fabricated from zinc-coated (galvanized) steel sheet.

2. For concrete walls: Metal slots with adjustable inserts or adjustable wall furring brackets. Spacers may be fabricated from 1 mm (0.0396 inch) thick galvanized steel with corrugated edges.

PART 3 EXECUTION

3.01 INSTALLING STUDS

A. Install studs in accordance with ASTM C754, except as otherwise shown or specified.

B. Space studs not more than 610 mm (24 inches) on center.

C. Cut studs 6 mm to 9 mm (1/4 to 3/8 inch) less than floor to underside of structure overhead when extended to underside of structure overhead.

D. Where studs are shown to terminate above suspended ceilings, extend studs to underside of structure overhead.

E. Extend studs to underside of structure overhead.

F. Frame jambs of openings as shown.

G. Fasten studs as shown.

H. Form building expansion joints as shown.

3.02 INSTALLING WALL FURRING FOR FINISH APPLIED TO ONE SIDE ONLY

A. In accordance with ASTM C754, or ASTM C841 except as otherwise specified or shown.

B. Wall furring-Stud System:

1. Framed with 63 mm (2-1/2 inch) or narrower studs, 600 mm (24 inches) on center.

2. Brace as specified in ASTM C754 for Wall Furring-Stud System or brace with sections or runners or studs placed horizontally at not less than three foot vertical intervals on side without finish.

3. Securely fasten braces to each stud with two Type S pan head screws at each bearing.

C. Direct attachment to concrete; rigid channels or "Z" channels:

1. Install rigid (hat section) furring channels at 600 mm (24 inches) on center, horizontally or vertically.

2. Install "Z" furring channels vertically spaced not more than 600 mm (24 inches) on center.

3. At corners where rigid furring channels are positioned horizontally, provide mitered joints in furring channels.

4. Ends of spliced furring channels shall be nested not less than 200 mm (8 inches).

5. Fasten furring channels to walls with power-actuated drive pins or hardened steel concrete nails. Where channels are spliced, provide two fasteners in each flange.

6. Locate furring channels at interior and exterior corners in accordance with wall finish material manufacturers printed erection instructions. Locate "Z" channels within 100 mm (4 inches) of corner.

D. Installing Wall Furring-Bracket System: Space furring channels not more than 400 mm (16 inches) on center.

3.03 INSTALLING SUPPORTS REQUIRED BY OTHER TRADES

A. Provide for attachment and support of electrical outlets, plumbing, heating fixtures, access panel frames, wall bumpers, recessed fire extinguisher cabinets and other items like auto door buttons and auto door operators supported by stud construction.

B. Provide additional studs where required. Install metal backing plates, or special metal shapes as required, securely fastened to metal studs. Including locations for future County supplied and installed accessories and equipment such as; toilet accessories, caulk boards, projection screens and similar.

3.04 INSTALLING FURRED AND SUSPENDED CEILINGS OR SOFFITS

A. Install furred and suspended ceilings or soffits in accordance with ASTM C754 or ASTM C841 except as otherwise specified or shown for screw attached gypsum board ceilings and for plaster ceilings or soffits.

1. Space framing at 600 mm (24 inch) centers for gypsum board anchorage.

B. Use clips, bolts, or wire ties for direct attachment to steel framing.

C. Existing concrete construction exposed:

1. Use power actuated fasteners either eye pin, threaded studs or drive pins for type of hanger attachment required.

2. Install fasteners at approximate mid height of concrete beams or joists. Do not install in bottom of beams or joists.

D. Do not fasten to steel decking.

E. Construct and install ceiling bracing system as shown and in accordance with ASTM E580.

3.05 TOLERANCES

A. Fastening surface for application of subsequent materials shall not vary more than 3 mm (1/8 inch) from the layout line.

B. Plumb and align vertical members within 3 mm (1/8 inch.)

C. Level or align ceilings within 3 mm (1/8 inch.)

END OF SECTION

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PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Provide gypsum board systems including gypsum board, joint treatment, acoustical accessories, and general accessories for complete installation.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Product Data: Furnish manufacturer's literature for gypsum board, insulation, and acoustical accessories.

C. Manufacturer’s Certification: Furnish manufacturer's certification indicating products comply with Contract Documents and applicable codes.

1.04 PROJECT CONDITIONS

A. Do not begin installation of interior gypsum board until space is enclosed, space is not exposed to other sources of water, and space is free of standing water.

B. Maintain areas to receive gypsum board at minimum 50 degrees F for 48 hours prior to application and continuously after application until drying of joint compound is complete; comply with ASTM C840.

C. Immediately remove from site gypsum board for interior use exposed to water, including gypsum board with water stains, with signs of mold, and gypsum board with mildew.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. National Gypsum Co.

B. Georgia-Pacific Corp.

C. United States Gypsum Co., USG Corp.

2.02 PERFORMANCE REQUIREMENTS

A. General: Perform gypsum board work in accordance with ASTM C840 unless otherwise specified.

2.03 MATERIALS

A. Exterior Gypsum Board:

1. ASTM C1177/ C1177M, water-resistant core, 16 mm (5/8 inch) thick.

B. Gypsum Board: Comply with ASTM C840; maximum permissible lengths; ends square cut, tapered edges on boards to be finished.

1. Typical: ASTM C1396, Type X, fire rated gypsum board, unless otherwise indicated.

2. Tile Substrates: Cementitious backer units ASTM C1178, specified in Section 09 30 13 - Tiling.

3. Abuse Resistive: ASTM C1629, 16 mm (5/8 inch) thick., Type X.

C. Gypsum Board Accessories: Comply with ASTM C840.

1. Provide protective coated steel corner beads and edge trim; type designed to be concealed in finished construction by tape and joint compound.

2. Corner Beads: Manufacturer's standard metal beads.

3. Edge Trim: “J”, "L", "LK", or "LC" casing beads.

4. Reinforcing Tape, Joint Compound, Adhesive, Water, Fasteners: Types recommended by system manufacturer and conforming to ASTM C475.

a. Typical Joint Compound: Chemical hardening type for bedding and filling, ready-mixed or powder vinyl type for topping.

5. Control Joints: Back to back casing beads.

a. Back control joints with 4 mil thick polyethylene air seal.

D. Acoustical Accessories:

1. Acoustical Sealant: ASTM C919, type recommended for use in conjunction with gypsum board. Paintable, non-shrinking and non-cracking where exposed, non-drying, non-skinning, non-staining, and non-bleeding where concealed. Provide as required for acoustical ratings and at non-fire-rated partitions to seal edges of gypsum board.

2. Electrical Box Pads: Provide at outlet, switch and telephone boxes in walls with acoustical insulation.

a. Manufacturers for Non-Fire Rated Partitions:

1) Harry A. Lowry & Associates (800.772.2521)/Lowry's Electrical Box Pads.

2) Tremco Sheet Caulking (650.572.1656).

PART 3 EXECUTION

3.01 INSTALLATION

A. Openings: Obtain dimensions and locations from other trades and provide openings and enclosures for accessories, specialties, equipment, and ductwork.

B. Gypsum Board Installation: Install in accordance with ASTM C840 and manufacturer's recommendations.

1. Use screws when fastening gypsum board to furring and to framing.

2. Erect gypsum board with ends and edges occurring over firm bearing.

a. Ensure joints of second layer do not occur over joints of first layer in double layer applications.

3. Place control joints to be consistent with lines of building spaces and as directed by Architect.

a. Provide where system abuts structural elements.

b. Provide at dissimilar materials.

c. Wings of "L", "U" and "T" shaped ceilings.

4. Place corner beads at external corners; use longest practical lengths.

5. Place edge trim where gypsum board abuts dissimilar materials.

6. Tape, fill, and sand exposed joints, edges, corners and openings to produce surface ready to receive finishes; feather coats onto adjoining surfaces.

7. Finishing: Comply with Gypsum Association (GA) “Levels of Gypsum Board Finish”.

a. Level 4, three-coat finish to achieve special smooth surface ready for applied paint finishes.

8. Remove and replace defective work.

C. Acoustical Accessories Installation:

1. Place acoustical insulation tight within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.

2. Place acoustical sealant within partitions in accordance with manufacturer's recommendations; install acoustical sealant at gypsum board perimeter at:

a. Wood Framing: One or two beads.

b. Base layer and face layer.

c. Penetrations of partitions.

3. Tolerance: Maximum 1/4" space between gypsum board at floor, ceiling, and penetrations.

4. Install electrical box pads with pads molded and pressed on back side of box, closing openings, in accordance with manufacturer's instructions, for complete acoustical barrier.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. This Section describes the requirements for furnishing and installing ceramic tile, accessories and related materials as indicated on the Drawings and as specified herein.

1. Floor tile.

2. Toilet room wall tile and base.

3. Drinking fountain alcove.

4. Backsplash, break room.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 REFERENCES

A. American National Standards Institute (ANSI): Standard Specifications for the Installation of Ceramic Tile.

1. ANSI A108.4: Installation of ceramic tile with Water-Resistant Organic Adhesive.

2. ANSI A108.5: Installation of ceramic tile, with Dry-Set Portland Cement Mortar or Latex Portland Cement Mortar.

3. ANSI A108.10: Installation of Grout in Tilework.

4. ANSI A118.1: Dry-Set Portland Cement Mortar.

5. ANSI A118.4: Latex Portland Cement Mort ar.

6. ANSI A118.6: Ceramic Tile Grout.

7. ANSI A137.1: Standard Specifications for Ceramic Tile.

B. Tile Council of America (TCA): “Handbook for Ceramic Tile Installation”.

1.04 SYSTEM DESCRIPTION

A. Design Requirements: Floor tile tested both wet and dry shall have minimum static coefficient of friction of 0.60 in accordance with ASTM C1028.

1.05 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Samples:

1. Tile: Submit three full-sized samples of each color, size and type of tile specified

2. Trim Shapes: Each color, type, and shape

C. Product Data:

1. Pictorial information or samples showing manufacturer's full line of standard patterns and colors.

2. Upon completion of ceramic tile Work, submit two copies of a list of recommended maintenance products and procedures.

D. Mock-Up

1. One full toilet room wall with accessories shall be installed prior for Owner approval, prior to completion of remaining tile work.

2. Tile not meeting TCA standards and visual observations of architect for lippage and square shall be removed.

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver tile in manufacturer's original cartons, grade-sealed by manufacturer in accordance with ANSI A137.1, and with grade seals unbroken.

B. Deliver dry-set mortar in moisture-proof containers.

C. Manufactured mortars and grouts shall be from one manufacturer for each system, shall contain hallmarks certifying compliance with specified TCA and other referenced standards and shall be recommended by tile manufacturer for the application intended.

D. Organic adhesive containers shall bear hallmark of either Adhesive and Sealant Council or Tile Contractors of America certifying compliance with ANSI A136.1.

E. Store materials in accordance with manufacturer's directions and under cover in manner to prevent damage or contamination.

F. Handle materials carefully to avoid chipping and breakage.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Ambient Temperature: At least 50 degrees F and rising, when setting and grouting with Portland-cement mortar for at least 7 days after completion of installation.

B. Follow manufacturer's requirements for ambient temperature when setting and grouting with other than Portland-cement mortar.

C. Moisture Conditions: In accordance with tile and installation materials manufacturers' requirements.

D. Protect adjoining work surfaces before tile work begins.

E. Close spaces in which tile is being set to traffic and other work; keep closed until firmly set.

PART 2 PRODUCTS

2.01 MATERIALS

A. Tile, General:

1. Tile shall conform to ANSI A137.1, Standard Grade, and shall be the product of Daltile Company or approved equal.

2. Units shall be factory made. Furnish bases, caps, stops, returns, trimmers, and other shapes for a complete installation within limits of selected manufacturer's type group. Vertical internal corners and external corners shall be bull-nosed, including all transitions. Corners shall use special shapes that avoid straight edges, end of tile runs shall be bull-nosed. Finish shall match that of wall tile.

B. Ceramic Tile Type:

1. See Section 09 06 00. Schedules of Finishes.

C. Trim Shapes and Bases:

1. Provide bull-nose, returns, trimmers, and other shapes, both standard and special, to finish installation. See Drawings and Tile Trim in Section 2.02 Setting Materials for additional information.

2.02 SETTING MATERIALS

A. Concrete Primer: As recommended by waterproofing membrane manufacturer.

B. Waterproofing Membrane: Elastomeric-based, polyurethane coating, 3M Company "Scotch-Clad Brand Deck Coating Base Coat," or accepted equal.

C. Dry-Set Mortar: Conforming to ANSI A118.1.

D. Latex Portland Cement Mortar: Conforming to ANSI A118.4.

E. Organic Adhesive: In conformance with ANSI A136.1, Type I, low VOC.

F. Water: Clean and potable.

G. Setting Blocks.

H. Raimondi - Leveling System

I. Tile Trim/Floor Material Transition - Schluter Schiene, Anodized Aluminum

J. Corner Trim, Outside Corner - Schluter Rondec, Anodized Aluminum

K. Floor to Wall Transition – Schluter DILEX-AHK, Anodized Aluminum

2.03 GROUTING MATERIALS

A. Latex-Portland Cement Grout, or accepted equal, mastic grout: Special latex emulsions with commercial Portland cement grout, replacing all or part of water according to directions specified by latex manufacturer.

B. Grout: Custom Building Products, Polyblend (color to be selected by Architect), sanded grout at floor (1/8-inch joints), non-sanded grout at walls (1/8-inch joints).

C. Elastomeric Sealant: One part, mildew-resistant silicone and low VOC.

PART 3 EXECUTION

3.01 INSPECTION

A. Verify that conditions are satisfactory for the installation of ceramic tile and does not adversely affect the quality and execution of tile installation.

B. Condition of surfaces to receive tile:

1. Surfaces shall be firm, dry, clean and free of oily or waxy films.

2. Grounds, anchors, plugs, hangers, bucks, and electrical and mechanical work in or behind tile shall be installed prior to proceeding with tile Work.

C. Do not commence the installation until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. General: Install tile in accordance with the requirements of the specified TCA Method from the TCA "Handbook for Ceramic Tile Installation" appropriate to the tile and surface specified herein.

1. Set tile in a manner to produce solid bedding, smooth even surfaces, and uniform joints, accurately aligned and symmetrically arranged. Avoid use of tile less than half size. Cut and drill tile neatly without marring the tile and grind rough exposed edges.

2. Whenever possible, turn cut to inside corner. Terminate tile at center lines of doors, unless otherwise indicated.

3. Establish lines of borders where applicable, prior to spreading setting bed, centering field work in both directions. Lay tile from center line of wall or floor surface outward, with adjustments made at junction with other floor or wall surfaces.

4. Omit tile where floor or wall area is covered by permanently built-in equipment such as toilet fixtures and recessed accessories.

5. Patch existing tilework, layout shall match existing tile pattern. Align joints vertically and horizontally.

B. Wall Tile: Install in conformance with ANSI A108.4, using TCA Method W242. Utilize tile leveling systems. Use stainless steel trim system at all edges and terminations.

C. Curing: Apply non-staining laminated and reinforced Kraft paper having a bituminous or latex binder over floor tile as soon as pointing, grouting and cleaning are completed.

1. Lap the sheets at least 4 inches, and seal the laps against the escape of moisture.

2. Leave curing paper in place until job is ready for final cleaning.

3. Keep traffic off floors during the curing period (7 days).

4. Do not permit cement grouts to dry out until cured a minimum of 72 hours.

3.03 CLEANING

A. Clean surfaces after installation and grouting as recommended by tile manufacturer.

B. Remove grout haze, observing grout manufacturer’s recommendations as to use of acid and chemical cleaners.

C. Rinse tile work thoroughly with clean water before and after using chemical cleaners. Do not use acids or abrasive soaps on tile, except as approved by tile manufacturer.

D. Replace damaged, cracked, stained, or broken surfaces before time of final acceptance.

3.04 PROTECTION

A. Apply a protective coat of neutral cleaner solution, one part cleaner to one part water, to clean, completed tile walls and floors.

B. Maintain curing paper cover on floor tile to protect from construction dirt.

C. Place board walkways on newly tiled floors for at least 7 days where floors must be used as passageways by workmen.

D. Just before final acceptance of tile work, remove paper and rinse protective coat of neutral cleaner from tile surfaces.

END OF SECTION

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PART 1 GENERAL

1.01 SECTION INCLUDES

A. Suspended metal grid ceiling systems

B. Acoustical panels

C. Perimeter trim

D. Replace and patching of existing ceiling systems.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Provide product data on metal grid system components and acoustic units.

C. Submit two samples 6x6 inch in size, illustrating material and finish of acoustic units.

D. Submit two samples each, 12 inches long of suspension system main runner, cross runner and edge trim.

E. Manufacturer's Literature and Data:

1. Ceiling suspension system, each type, showing complete details of installation.

2. Acoustical units, each type.

F. Manufacturer's Certificates:

1. Acoustical units, each type, in accordance with specification requirements.

2. Drilled Expansion Anchors: ICBO Evaluation Report.

1.04 APPLICABLE STANDARDS

The latest edition of publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.

A. American Society for Testing and Materials (ASTM):

A526/A526M	Steel, Zinc-Coated (Galvanized by the Hot-Dip Process, Commercial Quality)
A641	Zinc-coated (Galvanized) Carbon Steel Wire
A653	Steel Sheet, Zinc-Coated (Galvanized) or Zinc Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
C423	Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
C634	Standard Terminology Relating to Environmental Acoustics
C635	Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings
C636	Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels
E84	Standard Test Method for Surface Burning Characteristics of Building Materials
E119	Fire Tests of Building Construction and Materials
E597	Determining a Single-Number Rating of Airborne Sound Isolation for Use in Multi-unit Building Specifications
E580	Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint
E1111	Standard Test Method for Measuring the Interzone Attenuation of Ceiling Systems (for open plan products)
E1264	Classification for Acoustical Ceiling Products
E1414	Standard Test Method for Airborne Sound Attenuation between Rooms Sharing a Common Ceiling Plenum
E1477	Standard Test Method for Luminous Reflectance Factor of Acoustical Materials by Use of Integrating-Sphere Reflectometers
G21	Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi (for HumiGuard Plus products)

B. Federal Specification (Fed. Spec):

FF-F-395B	Pin, Drive, Guided and Pin Drive, Power Actuated (Fasteners for Power Actuated Hand Fastening Tools)

C. International Conference of Building Officials (ICBO):

D. California Building Code (CBC): Chapter 25, Section 2504 and Table A.

1.05 QUALITY ASSURANCE

A. Qualifications of Installer: Minimum of three project installations of extent comparable to

proposed project.

B. Single Source Responsibility: To ensure proper interface and color match, all acoustical panel units and grid components shall be produced or supplied by a single manufacturer. Materials supplied by more than one manufacturer are not permissible.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver with manufacturer's labels indicating brand name, patter, size, and thickness.

B. Protect against exposure to moisture, sunlight, surface contamination and other unacceptable conditions.

C. Store cartons open at each end to stabilize moisture content and temperature in accordance with manufacturer's recommended limitations.

D. Do not begin installation until sufficient materials to complete a room are received.

1.07 PROJECT CONDITIONS

A. Do not install ceilings until building is enclosed, sufficient heat is provided, dust generating

Activities have terminated and overhead mechanical work is completed, tested and approved.

B. Allow wet work to dry prior to commencement of installation.

C. Maintain a uniform temperature minimum of 60 degrees and humidity of 20 percent to 40 percent prior to and during installation of materials or as recommended by the manufacturer.

D. Coordinate acoustical ceiling work with installers of related work including, but not necessarily limited to, building insulation, gypsum drywall, light fixtures, mechanical systems, and electrical systems.

1.08 MAINTENANCE

A. Extra Material: Deliver extra material to owner; furnish extra material described below matching products installed. Package with protective covering for storage and identify with appropriate labels.

1. Acoustical Ceiling Units: Furnish quantity of full-sized units equal to 5% of the amount installed.

2. Exposed Suspension Systems Components: Furnish quantity of each suspension component equal to 2% of the amount installed.

1.09 WARRANTY

A. Submit a written warranty executed by the manufacturer, agreeing to repair or replace acoustical panels or grid that fails within the warranty period. Failures include, but are not limited to:

1. Acoustical Panels: Sagging and warping.

2. Grid System: Rusting and manufacturers' defects.

B. Warranty period for acoustical panels shall be one (1) year for standard products.

C. Warranty period for grid system shall be ten (10) years from date of Acceptance of the Work.

D. The Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to the run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS – Suspension Systems

A. Acoustical Ceiling Panels: Acceptable manufacturers for approval include Armstrong Ceiling Systems; Chicago Metallic Corporation; USG Interiors; or approved equal.

B. Suspension System: Acceptable manufacturers for approval include Chicago Metallic, USG Donn Corp., or approved equal.

2.02 SUSPENSION SYSTEM MATERIALS

A. Grid: ASTM C635. Heavy duty, non-fire rated, exposed T, components die cut and interlocking. Catalog numbers of acceptance manufacturer are indicated on drawings.

B. Accessories: Stabilizer bars, clips, splices and edge moldings required for suspended grid system.

C. Grid Material: Commercial quality cold rolled steel with galvanized coating.

D. Grid Finish: Off-white color, baked enamel.

E. Support Channels and Hangers: Galvanized steel, size and type to suit application to rigidly secure acoustic ceiling system including integral mechanical and electrical components as detailed on drawings.

F. Compression strut: ASTM A513, telescoping design as detailed on drawings, galvanized ¾ inch diameter 14 gage rigid steel tubing with crimped end attached to roof framing and secured to ½ inch diameter 14 gage rigid steel tubing with crimped end to main runners or equivalent pre-manufactured compression post supplied by ceiling grid manufacturer.

G. Hanger Wire: ASTM C641, Class 1 coating (galvanized), soft temper, No 12 gage.

2.03 ACCEPTABLE MANUFACTURERS – Acoustic Units

A. Armstrong World Industries

B. USG Interiors, Inc.

C. Chicago Metallic Ceiling Systems

D. Substitutions: Under provision of Division 01.

2.04 ACOUSTIC UNIT MATERIALS

A. Acoustic Panels: Provide ACT-1 as called for on the drawings, and conforming to ASTM E 1264 and the following:

1. ACT-1 – Equivalent to Armstrong Cirrus Acoustical tiles.

(1)	Type:	Cirrus
(2)	Form:	Angled Tegular
(3)	Pattern Designation:	Nodular, medium texture, Factory-applied latex paint
(4)	Size:	24x24 inches
(5)	Thickness:	15/16 inches
(6)	Composition:	Wet-formed Mineral Fiber
(7)	Light Reflectance:	0.85 to 0.88
(8)	NRC Range:	0.55 to 0.75
(9)	CAC range:	35 to 39
(10)	Edge:	Angled Tegular
(11)	Surface Color:	White
(12)	Flame Spread:	(0-25) Class A, UL 723
(13)	Smoke Density:	(0- 50) when tested in accordance with NFPA 286

B. Acoustic Panels: Provide ACT-2 as called for on the drawings, and conforming to ASTM E 1264 and the following:

1. ACT-2 – Equivalent to Armstrong Ceramaguard Acoustical tiles.

(1)	Type:	Ceramaguard
(2)	Form:	Square Lay-in
(3)	Pattern Designation:	medium texture
(4)	Size:	24x24 inches
(5)	Thickness:	15/16 inches
(6)	Composition:	Wet-formed ceramic and mineral fiber composite

(7)	Light Reflectance:	0.75 to 0.85
(8)	NRC Range:	0.55 to 0.75
(9)	CAC range:	35 to 40
(10)	Edge:	Square Lay-In 15/16
(11)	Surface Color:	White
(12)	Flame Spread:	(0-25) Class A, UL 723
(13)	Smoke Density:	(0- 50) when tested in accordance with NFPA 286

PART 3 EXECUTION

3.01 INSPECTION

A. Verify that existing conditions are ready to receive work.

B. Verify that layout of hangers will not interfere with other work.

C. Beginning of installation means acceptance of existing conditions.

3.02 PREPARATION

A. Coordination: Furnish layouts for preset inserts, clips, and other ceiling anchors whose installation is specified in other sections.

B. Measure each ceiling area and establish the layout of acoustical board to balance border widths at opposite edges of each ceiling. Avoid using less than half widths units at borders, and conform to the layout indicated on Drawings.

C. Edges of panels shall be tooled to drop into ceiling system.

3.03 CEILING TREATMENT

A. Treatment of ceilings shall include sides and soffits of ceiling beams, furred work 24 inches wide and over, and vertical surfaces at changes in ceiling heights unless otherwise shown.

B. Lay out acoustical units symmetrically about center lines of each room or space unless shown otherwise on reflected ceiling plan.

C. Moldings:

1. Install metal wall molding at perimeter of room, column, or edge at vertical surfaces.

2. Install special shaped molding at changes in ceiling heights and at other breaks in ceiling construction to support acoustical units and to conceal their edges.

3. Install metal trim and wood wrapped aluminum veneer at edges of floating linear wood ceiling systems.

D. Perimeter Seal:

1. Install perimeter seal between vertical leg of wall molding and finish wall, partition, and other vertical surfaces.

2. Install perimeter seal to finish flush with exposed faces of horizontal legs of wall molding.

3.04 CEILING SUSPENSION SYSTEM INSTALLATION

A. General:

1. Install metal suspension system for acoustical tile and lay-in panels in accordance with ASTM C636 and ASTM E580 as supplemented in this Section and with notes on the drawings entitled Metal Suspension System for Lay-in Panel Ceilings.

2. Install after major above ceiling work is complete. Coordinate the location of hangers with other work.

3. Hang systems independent of columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

4. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest effected hangers and related carrying channels to span the extra distance.

5. Compression struts to be installed at each main runner not exceeding 12’-0” o.c. in both directions and not more than 8” from end of main runner. Insert main ¾ inch tube over ½ inch tube with a minimum 6 inch lap. Secure crimped and of main ¾ inch tub to structural framing with metal screws and ½ inch tube to main runner with metal screws. Secure tube sections together with 2 set screws. Install prefabricated compression post according to manufacturer’s recommendations.

6. Locate system on room axis according to reflected plan.

7. Do not eccentrically load system or produce rotation of runners.

8. Install edge molding at intersection of ceiling and vertical surfaces, using longest practical lengths. Miter corners. Provide edge moldings at junction with other interruptions. Bend to match ceiling curve profile.

B. Seismic Ceiling Bracing System:

1. Construct system is accordance with ASTM E580 and as additionally detailed on plans.

2. Connect bracing wires to structure above as specified for anchorage to structure and to ceiling suspension system as additionally detailed.

3.05 ACOUSTICAL UNIT INSTALLATION

A. Field reveal cut edge of perimeter tiles to match factory reveal edge. Paint cut surface if necessary to match surface of tile.

B. Fit acoustic units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Lay directional patterned units one way in room. Fit border neatly against abutting surfaces.

D. Lay Install acoustic units level, in uniform plane and free from twist, wrap and dents.

E. Custom cut, route, texture and paint MDF infill panels at column/celling intersections.

3.06 ADJUSTING AND CLEANING

A. Maintain tolerances in accordance with manufacturer requirements.

B. Variation from Flat and Level Surface: 1/8 inch in 10 feet

C. Variation from Plumb of Grid Members caused by eccentric loads: 2 degrees maximum.

D. Cut and patch adjacent ceiling systems as required to integrate with new remodeled ceiling area for final finished appearance.

3.07 TOLERANCES

A. Replace damaged, discolored, dirty, cracked and broken acoustical units and grid tees.

B. Touch up scratches, abrasion, voids, and other defects in painted surfaces.

C. Leave finished work free from defects.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. High performance luxury vinyl tile.

B. Resilient base (rubber).

C. Resilient floor tile (rubber).

D. Relisient stair treads and risers (rubber).

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 QUALITY ASSURANCE

A. Furnish each style and color of resilient flooring from a single mill run. Submit manufacturer's certified compliance.

B. Maintain complete manufacturer's installation directions for all products at the job site throughout installation.

C. Qualifications of Installer: Minimum of three project installations of extent comparable to proposed Project.

D. Regulatory Requirements:

1. Materials shall have the following flammability ratings, according to ASTM E84:

a. Flame Spread: 75 or less.

b. Smoke Density: 450 or less.

2. Slip Resistance: In accordance with ADA Section A4.5 recommendations, flooring shall have a minimum static coefficient of friction of 0.6 for floors ASTM D2047 “ Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine”.

1.04 SUBMITTALS

A. Comply with requirements of Section 01 33 00 – Submittal Procedures.

B. Manufacturer's Literature and Data:

1. Description of each product.

2. Resilient material manufacturers recommendations for adhesives, underlayment, primers and polish.

3. Application and installation instructions.

C. Samples:

1. Tile: Three 12 inches by 12 inches (300 mm by 300 mm) tile for each type, pattern and color.

2. Base: Three 6 inch (150 mm) long pieces for each type and color.

D. Extra Material: Deliver to the State at completion of work extra materials as listed below. Furnish all products from same mill runs as the installed products. Deliver in original wrappings, properly identified.

1. Each type and color of flooring: 5%.

2. Each type and color of rubber top-set: 5%.

E. Upon completion of work, submit three (3) copies of manufacturer's maintenance and installation

1.05 DELIVERY, STORAGE AND HANDLING

A. Delivery and Storage: Deliver material to the job site and store in their original unopened containers with all labels intact and legible at time use. Store materials at not less than 70 degrees F. for not less than 24 hours immediately before installation.

B. Store in strict accordance with the manufacturers' recommendations.

C. Protection: Use all means necessary to protect materials of the section before, during and after installation and to protect installed work and material of all other trades.

D. Replacements: In the event of damage, immediately make all repairs and replacements necessary for approval by the State and at no additional cost to the State.

1.06 APPLICABLE STANDARDS: The latest edition of publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by basic designation only.

A. American Society for Testing and Materials (ASTM):

D4078	Water Emulsion Floor Finish
D3564	Application of Floor Polishes to Maintain Vinyl Asbestos Tile or Flooring
F510	Resistance to Abrasion of Resilient Floor Coverings Using an Abrader with a Grit Feed Method
F710	Preparing Concrete Floors and other Monolithic Floors to Receive Resilient Flooring
F1066	Vinyl Composition Floor Tile

B. Federal Specifications (Fed. Spec):

SS-T-312B	Tile, Floor: Asphalt, Rubber, Vinyl, and Vinyl
SS-W-40A	Wall Base; Rubber, And Vinyl Plastic
INT AMD 2	Composition
MMM-A-115C-79	Adhesive, Asphalt, Water Emulsion Type (For Asphalt And Vinyl Composition Tiles)

C. National Fire Protection Association (NFPA):

NFPA 253	Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using Radiant Heat Energy Source

D. Resilient Floor Covering Institute (RFCI):

ADH-1	Vinyl Composition Tile Adhesive
ADH-2	Wall Base Adhesive
ID-2	Concrete Treating Compounds Installation Specifications for Vinyl Composition, Solid Vinyl and Asphalt Tile Floorings
CL-1	Cleaners for Use on Resilient Floor Coverings (Revised 1988)
TM-6	Determination of Quality of Cut (Joint Tightness and Corner Openings) of Resilient Tile

1.07 GUARANTEE / WARRANTY

A. Section 01 77 00 - Closeout Procedures.

B. Provide State with a guarantee, signed by the Contractor and cosigned by the installer, stating that resilient base will stay fully adhered to substrate for a minimum period of two (2) years after Completion Date, and that any resulting failures will be repaired at no additional cost to the client.

C. Failures include any and all delamination of the resilient base from the substrate other than for causes of excessive abuse.

PART 2 PRODUCTS

2.01 TILE MANUFACTURERS

A. Interface

B. Armstrong World Industries

C. Mannington Commercial

D. Roppe

E. Nora

2.02 GENERAL

A. Furnish product type, materials of the same production run.

B. Use adhesives, underlayment, primers and polish recommended by the floor resilient material manufacturer.

C. Interior Floor Finishes For Corridors, Stairs, and Halls: Flame spread not to exceed 25, Smoke developed not to exceed 450 per ASTM E84.

D. Interior Floor Finishes For Remaining Areas: Flame spread not to exceed 75, Smoke developed not to exceed 450 per ASTM E84.

2.03 FLOOR TILE: Interface, Mannington Commercial, Armstrong, Roppe, Nora or approved equal.

A. Tile: See Section 09 06 00, Schedules for Finishes, colors to be selected; or approved equal.

B. Tile Standard:

a. Rubber tile: ASTM F1344, Class I-A, Homogeneous Rubber Tile, solid color.
b. High performance luxury vinyl tile: ASTM F1700, Class III Printed Vinyl Tile.

C. Rubber Hardness: Grade 1, minimum hardness of 85, measured using Shore, Type A durometer according to ASTM D2240.

D. Wearing Surface: See Schedule for Finishes Specification section 09 06 00.

E. Molded-Pattern Figure: See Schedule for Finishes Specification section 09 06 00.

F. Thickness: See Schedule for Finishes Specification section 09 06 00.

G. Size: See Schedule for Finishes Specification section 09 06 00.

H. Color: See Schedule for Finishes Specification section 09 06 00.

I. Pattern: See Schedule for Finishes Specification section 09 06 00.

2.04 RUBBER STAIR TREADS: Mannington Commercial, Armstrong, Roppe, Nora or approved equal.

A. Rubber Stair Treads & Risers: See Section 09 06 00, Schedules for Finishes, colors to be selected; or approved equal.

B. Tile Standard: ASTM F2169, Type TS, Class 1 and 2, Group 1 and 2.

C. Hardness: Grade 1, minimum hardness of 85, measured using Shore, Type A durometer according to ASTM D2240.

D. Slip Resistance: ASTM D2047, ≥ 0.5 SCOF (ADA compliant)

E. Flammability: ASTM E648, Class 1 (≥ 0.45 W/cm²)

F. Smoke Density: ASTM E662, ≤ 450.

2.05 RUBBER BASE: Mannington Commercial, Armstrong, Roppe, Nora or approved equal.

A. Tile Base: See Section 09 06 00, Schedules for Finishes, colors to be selected; or approved equal.

B. Provide pre-molded outside corners.

2.06 ADHESIVE

A. Adhesives at floor tile and wall base: Provide adhesives as recommended by the floor system manufacturer.

B. Comply with applicable regulations regarding toxic and hazardous materials Green Seal (GS-36) for commercial adhesive.

C. Use low-VOC adhesive during installation. Water based is preferred over solvent based adhesives.

2.07 PRIMER

A. Primer (for concrete subfloors): As recommended by the adhesive and floor tile system manufacturer.

2.08 LEVELING COMPOUND

A. Leveling compound: Provide cementitious products with latex or polyvinyl acetate resins in the mix as recommended by the floor tile system manufacturer.

B. Determine the type of underlayment selected for use by the condition to be corrected.

2.09 POLISH AND CLEANERS

A. Polish: As recommended by the floor tile system manufacturer.

B. Cleaner: As recommended by the floor tile system manufacturer.

2.10 TRANSITION & EDGE STRIPS

A. 1-1/8 inch (28 mm) wide unless shown otherwise.

B. Bevel from maximum thickness to minimum thickness for flush joint unless shown otherwise.

C. Extruded aluminum, mill finish, mechanically cleaned:

1. Drill and counter sink edge strip for flat head screws.

2. Space holes near ends and approximately 225 mm (9 inches) on center between.

2.11 SCREWS

A. Stainless steel flat head screw.

PART 3 EXECUTION

3.01 PROJECT CONDITIONS

A. Maintain temperature of materials at a minimum of 70 degrees F (22 degrees C,) for 48 hours before installation.

B. Maintain the temperature of rooms where work occurs between 70 degrees and 80 degrees F (21 degrees and 27 degrees C), for at least 48 hours, before, during and after installation.

C. Do not install flooring until building is permanently enclosed and wet construction in or near areas to receive tile materials is complete, dry and cured.

3.02 SUBFLOOR PREPARATION

A. Examine surfaces on which resilient flooring is to be installed.

B. Correct conditions which will impair proper installation.

C. Fill cracks, joints and other irregularities in concrete with leveling compound and level floors for a maximum wave variation of 1/8-inch in 10 feet (1:1000) (non-accumulative).

1. Do not use adhesive for filling or leveling purposes.

2. Do not use leveling compound to correct imperfections which can be corrected by spot grinding.

3. Trowel to smooth surface free of trowel marks, pits, dents, protrusions, cracks or joints.

D. Clean floor of oil, paint, dust, and deleterious substances: Leave floor dry and cured free of residue from existing curing or cleaning agents.

E. Concrete Subfloor Testing:

1. Apply a 1-meter (three foot) square test patch to the prepared concrete subfloor in room or area to be tiled in accordance with RFCI ID-2.

2. After the test patches have remained on the floor for a period of 72 hours, check adherence to surface by scraping test patches for ease of removal.

F. Perform additional subfloor preparation to obtain satisfactory adherence of flooring if subfloor test patches allows easy remove of tile.

G. Prime the concrete subfloor if the primer will seal slab conditions that would inhibit bonding, or if priming is recommended by the tile or adhesive manufacturers.

H. Conduct and Comply with all manufacturer required testing prior to installation.

3.03 INSTALLATION

A. Install in accordance with RFCI INS and manufacturer's instructions for application and installation unless specified otherwise.

B. Mix tile from at least two containers. An apparent line either of shades or pattern variance will not be accepted.

C. Tile Layout:

1. If layout is not shown on drawings, lay tile symmetrically about center of room or space with joints aligned.

2. No tile shall be less than 6-inches and of equal width at walls.

3. Place tile pattern in the same direction; do not alternate tiles.

D. Trim tiles to touch for the length of intersections at pipes and vertical projections, seal joints at pipes with waterproof cement.

E. Application:

1. Apply adhesive uniformly with no bare spots.

a. Conform to RFC1-TM-6 for joint tightness and for corner intersection unless layout pattern shows random corner intersection.

b. More than 5 percent of the joints not touching or any joint more than 0.005-inch wide will not be accepted.

2. Roll tile floor with a minimum 100-pound roller. No exceptions.

3. The State Representative may have test tiles removed to check for non-uniform adhesion, spotty adhesive coverage, and ease of removal. Install new tile for broken removed tile.

F. Installation of Transition Strips:

1. Locate transition strips under centerline of doors unless otherwise shown.

2. Set resilient edge strips in adhesive. Anchor metal edge strips with anchors and screws specified.

3. Where tile edge is exposed, butt edge strip to touch along tile edge.

4. Where thin set ceramic tile abuts resilient tile, set edge strip against floor file and against the ceramic tile edge.

3.04 TILE LOCATION

A. Unless otherwise specified or shown, install tile on floor under areas where casework and other equipment occurs, except where mounted in wall recesses.

B. Extend tile and sheet vinyl flooring for room into adjacent closets and alcoves.

3.05 BASE INSTALLATION

A. Location:

1. Unless otherwise specified or shown, where base is scheduled, install base over

toe space of base of casework, lockers, laboratory, pharmacy furniture island cabinets and where other equipment occurs.

2. Extend base scheduled for room into adjacent closet, alcoves, and around columns.

B. Application:

1. Apply adhesive uniformly with no bare spots.

2. Set base with joints aligned and tightly butted to touch for entire height. Joints not to exceed 5 mils (0.005 inch) as measured in accordance with RFCI TM-6.

3. Before starting installation, layout base material to provide the minimum number of joints with no strip less than 24 inches (600 mm) length.

a. Short pieces to save material will not be permitted.

b. Locate joints as remote from corners as the material lengths or the wall configuration will permit.

C. Form corners and end stops as follows:

1. Use pre-molded corners for external corners

2. Score face of inside corner and notch cove.

D. Roll base for complete adhesion.

3.06 CLEANING AND PROTECTION

A. Clean adhesive marks on exposed surfaces during the application of resilient materials before the adhesive sets. Exposed adhesive is not acceptable.

B. Keep traffic off resilient material 72 hours after installation.

C. Clean and polish materials in the following order:

1. For the first two weeks sweep and damp mopped only.

2. After two weeks, scrub resilient materials with a minimum amount of water and a mild detergent. Leave surface clean and free of detergent residue.

3. Apply wax polish to the floors in accordance with the polish manufacturer's instructions.

D. When construction traffic occurs over tile, cover resilient materials with reinforced craft paper. At entrances and where wheeled vehicles or carts are used, cover tile with plywood, hardboard, or particleboard over paper. All protective surfaces are to be properly secured and maintained.

E. When protective materials are removed and immediately prior to acceptance, replace any damage tile, re-clean resilient materials, lightly re-apply polish and buff floors.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. Static dissipative resilient flooring and accessories as shown on the drawings and schedules and as indicated by the requirements of this section.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 REFERENCES

A. ASTM International:

1. ASTM E 648 Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source

2. ASTM E 662 Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials

3. ASTM F 710 Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring

4. ASTM F 1066 Standard Specification for Vinyl Composition Tile

5. ASTM F 1482, Standard Guide to Wood Underlayment Products Available for Use Under Resilient Flooring

6. ASTM F 1861 Standard Specification for Resilient Wall Base

7. ASTM F 1869 Standard Test Method for Measuring Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride

8. ASTM F 2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes

B. National Fire Protection Association (NFPA):

1. NFPA 253 Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source

2. NFPA 258 Standard Test Method for Measuring the Smoke Generated by Solid Materials

C. ANSI/ESD Standards

1. ANSI/ESD STM 7.1 :Floor Materials—Resistive Characterization of Materials

2. ANSI/ESD STM 97.1: Floor Materials and Footwear—Resistance in Combination with a Person

3. ANSI/ESD STM 97.2: Floor Materials and Footwear Voltage Measurement in Combination with a Person

D. Resilient Floor Covering Institute (RFCI):

1. ADH-1 Vinyl Composition Tile Adhesive

2. ADH-2 Wall Base Adhesive

3. ID-2 Concrete Treating Compounds Installation Specifications for Vinyl Composition, Solid Vinyl and Asphalt Tile Floorings

4. CL-1 Cleaners for Use on Resilient Floor Coverings (Revised 1988)

5. TM-6 Determination of Quality of Cut (Joint Tightness and Corner Openings) of Resilient Tile

1.04 SYSTEM DESCRIPTION

A. Performance Requirements: Provide flooring which has been manufactured, fabricated and installed to performance criteria certified by manufacturer without defects, damage, or failure.

B. Administrative Requirements

1. Pre-installation Meeting: Conduct an on-site pre-installation meeting to verify project requirements, substrate conditions, manufacturer’s installation instructions and manufacturer’s warranty requirements. Comply with Division 1 Project Management and Coordination (Project Meetings) Section.

C. Sequencing and Scheduling

1. Do not install flooring over concrete slabs until they are sufficiently dry to achieve a bond with the adhesive, in accordance with the manufacturer's recommended bond, moisture tests and pH test.

1.05 QUALITY ASSURANCE

A. Single-Source Responsibility: provide types of flooring and accessories supplied by one manufacturer, including moisture mitigation systems, primers, leveling and patching compounds, and adhesives.

B. Furnish each style and color of resilient flooring from a single mill run. Submit manufacturer's certified compliance.

C. Maintain complete manufacturer's installation directions for all products at the job site throughout installation.

D. Qualifications of Installer: Select an installer who is experienced and competent in the installation of resilient vinyl composition tile flooring and the use of subfloor preparation products. Minimum of three project installations of extent comparable to proposed Project.

1. Confirm installer's certification by requesting their credentials

E. Fire Performance Characteristics: Provide resilient vinyl composition tile flooring with the following fire performance characteristics as determined by testing material in accordance with ASTM test methods indicated below by a certified testing laboratory or other testing agency acceptable to authorities having jurisdiction:

1. ASTM E 648 Critical Radiant Flux of 0.45 watts per sq. cm. or greater, Class I

2. ASTM E 662 (Smoke Generation) Maximum Specific Optical Density of 450 or less

3. Slip Resistance: In accordance with ADA Section A4.5 recommendations, flooring shall have a minimum static coefficient of friction of 0.6 for floors ASTM D2047 " Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine".

1.06 SUBMITTALS

A. Comply with requirements of Division 1 for Submittal Procedures.

B. Manufacturer's Literature and Data:

1. Description of each product.

2. Resilient material manufacturers recommendations for adhesives, underlayment, primers and polish.

3. Application and installation instructions.

C. Samples:

1. Tile: Three 12 inches by 12 inches (300 mm by 300 mm) tiles for each type, pattern and color.

D. Extra Material: Deliver to the State at completion of work extra materials as listed below. Furnish all products from same mill runs as the installed products. Deliver in original wrappings, properly identified.

1. Each type and color of flooring: 5%.

2. Each type and color of rubber top-set: 5%.

E. Upon completion of work, submit three (3) copies of manufacturer's maintenance and installation

1.07 DELIVERY, STORAGE AND HANDLING

A. Comply with Division 1 Product Requirements Sections

B. Delivery: Deliver material to the job site and store it in original unopened containers with all labels intact and legible at time use.

C. Installation: Maintain a minimum temperature in the spaces to receive the flooring and accessories of 65ºF (18ºC) and a maximum temperature of 85ºF (29ºC) for at least 48 hours before, during, and for not less than 48 hours after installation. Thereafter, the temperature should never rise above 100°F (38°C) nor fall below 55°F (13°C). Protect all materials from

the direct flow of heat from hot-air registers, radiators, or other heating fixtures and appliances. Refer to manufacturer's product installation recommendations for a complete guide to project conditions.

D. Storage: Store in strict accordance with the manufacturers' recommendations.

E. Protection: Use all means necessary to protect materials of the section before, during and after installation and to protect installed work and material of all other trades.

F. Replacements: In the event of damage, immediately make all repairs and replacements necessary for approval by the State and at no additional cost to the State.

1.08 GUARANTEE / WARRANTY

A. See Division 1 for Closeout Procedures.

B. Resilient Flooring: Submit a written warranty executed by the manufacturer, agreeing to repair or replace resilient flooring that fails within the warranty period.

C. Limited Warranty Period: 5 years

D. Limited Warranty shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and will be in addition to and run concurrent with other warranties made by the Contractor under the requirements of the Contract Documents.

1.09 MAINTENANCE

A. Extra Materials: Deliver extra materials to Owner. Furnish extra materials from the same production run as products installed. Packaged with protective covering for storage and identified with appropriate labels.

1. Quantity: Furnish quantity of flooring units equal to 5% of amount installed.

2. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra material.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Acceptable manufacturers of static dissipative resilient tile flooring system, adhesives and subfloor preparation products and accessories are as follows:

1. Armstrong World Industries

2. Roppe

3. Flexco

4. Ployfor

2.02 GENERAL

A. Furnish product type, materials of the same production run.

B. Use adhesives, underlayment, primers and polish recommended by the floor resilient material manufacturer.

C. Interior Floor Finishes For Corridors, Stairs, and Halls: Flame spread not to exceed 25, Smoke developed not to exceed 450 per ASTM E84.

D. Interior Floor Finishes For Remaining Areas: Flame spread not to exceed 75, Smoke developed not to exceed 450 per ASTM E84.

2.03 STATIC DISSIPATIVE FLOOR TILE:

A. Description: Static dissipative vinyl tile composed of polyvinyl chloride resin, plasticizers, fillers, pigments, and antistatic additive with colors and texture dispersed uniformly throughout its thickness:

1. See Section 09 06 00, Schedules for Finishes, for size, thickness, and colors to be selected; or approved equal.

B. Tile shall meet size, thickness, indentation, impact, deflection, dimensional stability, resistance to chemicals, squareness, and resistance to heat requirements of ASTM F 1066 Standard Specification for Vinyl Composition Tile, Class 2, through pattern.

2.04 STATIC DISSIPATIVE WALL BASE MATERIAL

A. For wall base selection, see Section 09 06 00, Schedules for Finishes.

2.05 STATIC DISSIPATIVE ADHESIVE

A. Adhesives at floor tile and wall base: Provide adhesives as recommended by the floor system manufacturer

B. Copper ground-connection strips: Provide size, occurrence, and location of copper ground-connection strips under the floor tile as recommended by the floor system manufacturer

C. Comply with applicable regulations regarding toxic and hazardous materials Green Seal (GS-36) for commercial adhesive.

D. Use low-VOC adhesive during installation. Water based is preferred over solvent based adhesives.

2.06 STATIC DISSIPATIVE PRIMER

A. Primer (for concrete subfloors): As recommended by the adhesive and floor tile system manufacturer.

2.07 STATIC DISSIPATIVE LEVELING COMPOUND

A. Static dissipative leveling compound: Provide cementitious products with latex or polyvinyl acetate resins in the mix as recommended by the floor tile system manufacturer.

B. Determine the type of underlayment selected for use by the condition to be corrected.

2.08 STATIC DISSIPATIVE POLISH AND CLEANERS

A. Static dissipative polish: As recommended by the floor tile system manufacturer.

B. Static dissipative cleaner: As recommended by the floor tile system manufacturer.

2.09 STATIC DISSIPATIVE TRANSITION & EDGE STRIPS

A. 1-1/8 inch (28 mm) wide unless shown otherwise.

B. Bevel from maximum thickness to minimum thickness for flush joint unless shown otherwise.

C. Extruded aluminum, mill finish, mechanically cleaned:

1. Drill and counter sink edge strip for flat head screws.

2. Space holes near ends and approximately 225 mm (9 inches) on center between.

2.10 SCREWS

A. Stainless steel flat head screw.

2.11 STATIC DISSIPATIVE FLOOR SYSTEM ACCESSORIES

A. As recommended by the floor tile system manufacturer.

PART 3 EXECUTION

3.01 PROJECT CONDITIONS

A. Maintain temperature of materials at a minimum of 70 degrees F (22 degrees C,) for 48 hours before installation.

B. Maintain the temperature of rooms where work occurs between 70 degrees and 80 degrees F (21 degrees and 27 degrees C), for at least 48 hours, before, during and after installation.

C. Do not install flooring until the building is permanently enclosed and wet construction in or near areas to receive tile materials is complete, dry and cured.

3.02 SUBFLOOR PREPARATION

A. Examine surfaces on which resilient flooring is to be installed.

B. Correct conditions which will impair proper installation.

C. Fill cracks, joints and other irregularities in concrete with leveling compound and level floors for a maximum wave variation of 1/8-inch in 10 feet (1:1000) (non-accumulative).

1. Do not use adhesive for filling or leveling purposes.

2. Do not use leveling compound to correct imperfections which can be corrected by spot grinding.

3. Trowel to smooth surface free of trowel marks, pits, dents, protrusions, cracks or joints.

D. Clean floor of oil, paint, dust, and deleterious substances: Leave floor dry and cured free of residue from existing curing or cleaning agents.

E. Concrete Subfloor Testing:

1. Apply a 1-meter (three foot) square test patch to the prepared concrete subfloor in room or area to be tiled in accordance with RFCI ID-2.

2. After the test patches have remained on the floor for a period of 72 hours, check adherence to surface by scraping test patches for ease of removal.

F. Perform additional subfloor preparation to obtain satisfactory adherence of flooring if subfloor test patches allow easy remove of tile.

G. Prime the concrete subfloor if the primer will seal slab conditions that would inhibit bonding, or if priming is recommended by the tile or adhesive manufacturers.

H. Conduct and Comply with all manufacturers required testing prior to installation.

3.03 INSTALLATION

A. Install in accordance with RFCI INS and manufacturer's instructions for application and installation unless specified otherwise.

B. Mix tile from at least two containers. An apparent line either of shades or pattern variance will not be accepted.

C. Tile Layout:

1. If layout is not shown on drawings, lay tile symmetrically about center of room or space with joints aligned.

2. No tile shall be less than 6-inches and of equal width at walls.

3. Place tile pattern in the same direction; do not alternate tiles.

D. Trim tiles to touch for the length of intersections at pipes and vertical projections, seal joints at pipes with waterproof cement.

E. Application:

1. Apply adhesive uniformly with no bare spots.

a. Conform to RFC1-TM-6 for joint tightness and for corner intersection unless layout pattern shows random corner intersection.

b. More than 5 percent of the joints not touching or any joint more than 0.005-inch wide will not be accepted.

2. Roll tile floor with a minimum 100-pound roller. No exceptions.

3. The State Representative may have test tiles removed to check for non-uniform adhesion, spotty adhesive coverage, and ease of removal. Install new tiles for broken removed tiles.

F. Installation of Transition Strips:

1. Locate transition strips under the centerline of doors unless otherwise shown.

2. Set resilient edge strips in adhesive. Anchor metal edge strips with anchors and screws specified.

3. Where tile edge is exposed, butt edge strip to touch along tile edge.

4. Where thin set ceramic tile abuts resilient tile, set edge strip against floor file and against the ceramic tile edge.

3.04 TILE LOCATION

A. Unless otherwise specified or shown, install tile on floor under areas where casework and other equipment occurs, except where mounted in wall recesses.

B. Extend tile and sheet vinyl flooring for room into adjacent closets and alcoves.

3.06 CLEANING AND PROTECTION

A. Clean adhesive marks on exposed surfaces during the application of resilient materials before the adhesive sets. Exposed adhesive is not acceptable.

B. Keep traffic off resilient material 72 hours after installation.

C. Clean and polish materials in the following order:

1. For the first two weeks sweep and damp mopped only.

2. After two weeks, scrub resilient materials with a minimum amount of water and a mild detergent. Leave surface clean and free of detergent residue.

3. Apply wax polish to the floors in accordance with the polish manufacturer's instructions.

D. When construction traffic occurs over tile, cover resilient materials with reinforced craft paper. At entrances and where wheeled vehicles or carts are used, cover tile with plywood, hardboard, or particleboard over paper. All protective surfaces are to be properly secured and maintained.

E. When protective materials are removed and immediately prior to acceptance, replace any damage tile, re-clean resilient materials, lightly re-apply polish and buff floors.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. Furnish labor, materials, equipment, and services to install carpet tile materials and related components and accessories as shown on the Drawings, as specified herein and as required for a complete and proper installation.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 QUALITY ASSURANCE

A. Regulatory Requirement: Provide carpet tile with a minimum critical radiant flux limit of 0.22 watts/cm2 in compliance with National Fire Protection Association (NFPA) 253.

B. Maintain complete manufacturer’s installation directions for all products at the job site throughout installation. Installation shall conform to CRI 104 Standards.

C. Qualifications of Installer: Minimum of three years experience on at least three project installations of extent comparable to proposed Project.

D. Carpet Materials:

1. Face yarns shall be of same dye batch and finish material shall be of same mill run in each unit.

2. Conform to applicable codes for flame/smoke rating requirements in accordance with ASTM E84.

1.04 SUBMITTALS

A. Procedures: In accordance with Section 01 33 00 – Submittals.

B. Product Data:

1. Manufacturer's specifications, installation instructions, maintenance recommendations, and form of guarantee offered for each type of carpet.

C. Certification: Letter of certification that materials proposed comply with specified requirements.

D. Samples:

1. Carpet tile - submit three full size carpet tiles for each type and color.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver products in factory wrapping with manufacturer’s registry numbers attached and intact to prevent damage and deterioration during shipment, handling, and storage.

B. Maintain protective coverings in place and in good repair until removal is necessary for the Work.

C. Protect products against damage during shipment, field handling, and installation.

D. Store products inside enclosed storage facilities or closed building, supported above grade and slabs-on-grade.

E. Environmental Requirements:

1. Maintain storage spaces and products in dry condition at all times, and within temperature extremes recommended by manufacturer.

2. Store materials for one day prior to installation in area of installation to achieve temperature stability.

F. Follow manufacturer's special instructions.

1.06 COORDINATION

A. Existing Substrates.

1. Furnish instructions for condition required for such substrates, which are to receive new or replacement carpet.

B. Painting Work in areas to receive carpet shall have been completed prior to installation of carpet.

C. Metal thresholds at fire-rated door openings and elsewhere indicated or scheduled adjacent to carpet areas shall have been installed prior to carpet installation.

1.07 EXTRA MATERIALS

A. Carpet Tile: Furnish the Owner with a minimum of 5 percent of each type and color of material used in this project from same dye lot or production run for compatibility with the installed materials.

B. Deliver to Owner unused carpet pieces over 2 square feet and 8 inches in least dimension.

C. Store where indicated by Owner.

D. Provide the Owner with a signed receipt indicating materials and quantities upon delivery.

1.08 GUARANTEE

A. Guarantee directly or through carpet mill or fiber manufacturer the surface pile in any given area against abrasive wear of more than 10 percent within 15 years for carpet tile as properly installed and maintained. Misuse, damage, or improper cleaning methods

shall not apply. Carpet areas, which fail to perform, shall be replaced at no additional cost to Owner.

PART 2 PRODUCTS

2.01 GENERAL

A. Carpet Schedule:

a. See Section 09 06 00, Schedules for Finishes.

B. Carpet shall have a Critical Panel Flux of not less than .45 watts per square centimeter, in accordance with ASTM E648.

C. When tested in accordance with ASTM E662, smoke density shall not exceed 450.

D. Carpet shall meet requirements of DOC FF 1-70.

2.02 ACCESSORY MATERIALS

A. Edge Binder: Molded vinyl type designed for carpet in manufacturer's standard color; Flexco, Mercer, or accepted equal.

B. Carpet Adhesive: Release type recommended by carpet tile manufacturer.

C. Subfloor Filler: Latex base type as recommended by carpet tile manufacturer.

D. Miscellaneous: Tape, thread, and other items necessary for installation.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions under which carpet is to be installed. Do not install carpet over substrate, which is uneven, cracked, or has other detrimental conditions that could affect the performance and appearance of the carpet. Do not proceed with the Work until unsatisfactory conditions have been corrected.

B. Before installation, inspect carpet tile for manufacturing flaws, shipping damage, and other non-compliant conditions. Do not install carpet found not in compliance with Specifications.

C. Maintain spaces to receive carpet tile at 70 degrees F. minimum, for at least 48 hours previous to, during, and for 48 hours after installation of carpet.

3.02 SUBSTRATE PREPARATION

A. Clean substrates free from dust and other foreign and residual materials, which could inhibit proper bonding.

B. Fill cracks exceeding 1/16 inch in width, holes, and depressions to level surfaces. Maximum allowable variation of 1/4 inch in 10 feet. See Specification section “03 54 16 - Hydraulic Cement Underlayment”.

C. Prime substrates when and as recommended by manufacturer.

D. Confirm compatibility of adhesive with sealers or curing agency on concrete floors.

3.03 INSTALLATION

A. Install carpet tile and associated materials in accordance with manufacturer's printed instructions.

B. Install carpet tile prior to installation of movable fixtures.

C. Apply adhesive in accordance with manufacturer's printed instructions, and for uniform coverage directly onto floor. Remove excess cement with approved solvent.

D. Cut evenly along walls, cut and fit evenly around projections, corners, pipes, electrical outlets, floor air or heating elements, and trim strips.

E. Securely fasten carpet edging binder to floor wherever carpet tiles meet different flooring material and no threshold or other divider is noted.

F. Extend carpet tile materials under all open-bottomed and raised bottom obstructions, and under removable flanges of obstructions. Extend carpet tiles into closets and alcoves of rooms indicated to receive carpeting, unless another material is specifically identified to be used in that space. Carpet tile shall be installed under all movable furniture and equipment.

G. Neatly trim carpet free from loose thread ends and projecting frays. Finish installation shall be free from visual defects.

H. After each area of carpet has been installed, protect from soiling and damage.

I. Installation shall not receive furniture or heavy traffic for 48 hours after installation.

3.04 CLEANING AND COMPLETION

A. When complete, carpet joint lines shall be straight and free from stagger and offsets not intended.

B. Finished carpet surfaces shall be flat, true to plane, and free from offsets across Joints.

C. Units shall lay fully in place and free from warps, bulges, and lifting at edges.

D. Replace or repair any damaged base and door trim.

E. Vacuum-clean completed installation using equipment of type recommended by carpet manufacturer. Carpet base and walls shall be cleaned and free from stains, blemishes and other foreign materials.

F. In all carpeted areas subject to traffic, provide a temporary non-staining paper pathway in the direction of traffic. Remove temporary pathway upon final acceptance by the Owner.

END OF SECTION

PART 1 GENERAL

1.01 DESCRIPTION

A. Painting and finishing of exposed exterior and interior surfaces as required to complete finishing of the Work as indicated on the Drawings including the following items:

1. Mechanical diffusers.

2. Visible interior of ductwork.

3. Electrical Sub-panels painted to match adjacent wall surface.

4. Visible piping and electrical components.

B. The Work includes painting and finishing of new and existing interior and exterior exposed items and surfaces throughout project, except as otherwise indicated.

1. Surface preparation, priming and coats of paint specified are in addition to shop-priming and surface treatment specified under other sections of work.

C. Surfaces Not to be Painted:

1. Factory pre-finished items as specified in various Sections.

2. Pre-finished wall, ceiling, and floor coverings.

3. Painting specified elsewhere and included in respective Sections, including but not necessarily limited to, shop priming.

4. Code-Required Labels: Keep equipment identification and fire rating labels free of paint.

5. Surfaces concealed in walls and above ceilings except as specifically indicated otherwise.

6. Ducts, piping, conduit, and equipment concealed in walls and ceilings, unless specifically indicated otherwise.

D. "Paint" as used herein means all coating systems materials, including primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime, intermediate or finish coats.

E. Paint exposed surfaces whether or not colors are designated in "schedules", except where natural finish of material is specifically noted as a surface not to be painted. Where items or surfaces are not specifically mentioned, paint same as adjacent similar materials or areas. If color of finish is not designated, Architect will select these from standard colors available for materials systems specified.

1.02 RELATED WORKS

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Product Data:

1. Not less than 30 days before beginning work, submit a complete list of materials proposed for use, together with manufacturer's specifications.

2. Paint materials and products shall be subject to the Architect's acceptance.

C. Samples:

1. Custom and Stock Colors: Submit 8x8 inch brush-out samples for Architect's review of each color and texture. Provide a listing of material and application for each coat of each finish sample.

2. Samples shall be resubmitted as requested until required sheen, color, and texture is achieved.

3. Label and identify each sample as to location and application.

D. Field Samples: On actual wall surfaces and other exterior and interior building components in areas designated by Architect, duplicate painted finishes of prepared samples in 4 ft. sq. areas. Simulate finished lighting conditions for Architect's and Owner's review of in-place Work. Colors may require adjustment at no additional cost to Owner.

1.04 QUALITY ASSURANCE

A. Include on label of containers:

1. Manufacturer's name

2. Type of paint

3. Manufacturer's stock number

4. Color

5. Instructions for reducing, where applicable

B. Field Quality Control:

1. Request review by the Architect of first finished room, space, or item of each color scheme required for color, texture, and workmanship.

2. Use first acceptable room, space, or item as the Project standard for each color scheme.

C. Regulatory Requirements:

1. Comply with the regulations of the Southern California Air Quality Management District (SCAQMD) for Volatile Organic Contents (VOC's).

2. Paint shall be certified by the manufacturer as "non-lead" (less than 0.06 percent lead by weight in the dried film) as defined in Part 1303 of the Consumer Product Safety Act.

3. Work to be painted may contain excessive levels of lead-based paint. Contractor shall retain and pay for the services of a Testing Agency to perform and report on tests for such suspected material

1.05 DELIVERY AND STORAGE

A. Deliver materials to job site in original, new and unopened packages and containers bearing manufacturer's name and label, and following information:

1. Name or title of material

2. Manufacturer's stock number and date of manufacturer

3. Manufacturer's name

4. Contents by volume, for major pigment and vehicle constituents

5. Thinning instructions

6. Application instructions

7. Color name and number

B. Storage of Materials:

1. Store only acceptable project materials on project site.

2. Store in a suitable location.

3. Restrict storage to paint materials and related equipment.

4. Comply with health and fire regulations.

1.06 PROJECT CONDITIONS

A. Environmental Requirements:

1. Comply with manufacturer's recommendations as to environmental conditions under which coatings and coating systems can be stored and applied.

2. Do not apply paint in rain, fog or mist; or when relative humidity exceeds 85%; or to damp or wet surfaces; unless otherwise permitted by paint manufacturer's printed instructions.

3. Painting may be continued during inclement weather if areas and surfaces to be painted are enclosed and heated within temperature limits specified by paint manufacturer during application and drying periods.

1.07 WARRANTY

A. Color and Life of Film:

1. At the end of 1 year, colors of surfaces shall have remained free from serious fading, and variations (if any) shall be uniform.

2. Materials shall have their original adherence at end of 1 year and there shall be no evidence of blistering, running, peeling, scaling, chalking, streaking, or stains at end of this period.

1.08 MAINTENANCE

A. Extra Materials:

1. At completion of the Work, deliver to the Owner extra stock of paint equaling approximately 5 percent of each color used in each coating material used.

2. Stock shall be in tightly sealed and clearly labeled containers.

PART 2 PRODUCTS

2.01 MATERIALS

A. Product numbers specified in Article 3.06, “Paint Systems”, are as manufactured by Sherwin Williams, unless otherwise indicated. Equivalent products manufactured by Sinclair Paint Co., Benjamin Moore, Dunn-Edwards, ICI Paints, Fuller O’Brien or Glidden are acceptable.

B. Materials selected for coating system of each type of surface shall be the product of a single manufacturer.

C. Thinner: As recommended by each manufacturer for his respective product for use only within recommended limits.

D. Colors used shall be selected for their permanence and non-fading qualities. In addition, colors that are used over concrete and plaster surfaces shall be lime-proof.

E. Unsuitability of Specified Products: Claims concerning unsuitability of any materials specified will not be entertained, unless such claim is made in writing to the Architect before the Work is started.

F. Texturing: Match texture of adjacent textures when new materials abut textured areas.

2.02 MATERIAL QUALITY

A. Provide best quality grade of various types of coatings as regularly manufactured by acceptable paint materials manufacturers. Materials not displaying manufacturer's identification as a standard, best-grade product will not be acceptable.

B. Proprietary names used to designate colors or materials are not intended to imply that products of named manufacturers are required to exclusion of equivalent products of other manufacturers.

2.03 COLORS

A. Colors: Colors to be selected by Architect from manufacturer's color chart.

B. Color Pigments: Pure, non-fading, applicable types to suit substrates and service indicated.

C. Paint Coordination: Provide finish coats which are compatible with prime paints used. Review other sections of these specifications in which prime paints are to be provided to ensure compatibility of total coatings system for various substrates. Upon request from other trades, furnish information on characteristics of finish material proposed for use, to ensure compatible prime coats are used. Provide barrier coats over incompatible primers or remove and re-prime as required. Notify Architect in writing of any anticipated problems using specified coating systems with substrates primed by others.

2.04 MIXING AND TINTING

A. Deliver paints ready mixed to jobsite.

B. Accomplish job mixing and job tinting only when acceptable to the Architect.

C. Mix only in mixing pails placed in suitable sized nonferrous or oxide-resistant metal pans.

D. Use tinting colors recommended by manufacturer for specific type of finish.

PART 3 EXECUTION

3.01 EXAMINATION

A. Applicator must examine areas and conditions under which painting work is to be applied and notify Contractor in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to Applicator.

B. Starting of painting work will be construed as Applicator's acceptance of surfaces and conditions within any particular area.

C. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film.

3.02 SURFACE PREPARATION

A. General: Perform preparation and cleaning procedures in accordance with paint manufacturer's instructions and as herein specified, for each particular substrate condition.

B. Remove hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish-painted, or provide surface applied protection prior to surface preparation and painting operations. Remove, if necessary, for complete painting of items and adjacent surfaces. Following completion of painting of each space or area, reinstall removed items.

C. Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease prior to mechanical cleaning. Program cleaning and painting so that contaminants from cleaning process will not fall onto wet, newly-painted surfaces. Do not paint until all interior gypsum board is installed, taped and sanded.

D. Gypsum Board:

1. Fill narrow, shallow cracks and small holes with spackling compound.

2. Rake deep, wide cracks and deep holes.

a. Dampen with clear water.

b. Fill with thin layers of drywall joint cement.

3. Allow to dry.

4. Sand smooth after drying; do not raise nap of paper on gypsum board.

5. See Section 09 25 00 for requirements for gypsum board finishing.

E. Ferrous Metals: Clean ferrous surfaces, which are not galvanized or shop-coated, of oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning.

1. Touch-up shop-applied prime coats wherever damaged or bare, where required by other sections of these specifications. Clean and touch-up with same type shop primer.

F. Galvanized Surfaces: Clean free of oil and surface contaminants with non-petroleum-based solvent.

G. Surfaces which cannot be prepared or painted as specified shall be immediately brought to the attention of the Architect in writing.

1. Starting of work without such notification will be considered acceptance by the Contractor of surface involved.

2. Contractor shall replace unsatisfactory work caused by improper or defective surfaces, as directed by the Architect, at no additional cost to the Owner.

3.03 MATERIALS PREPARATION

A. Mix and prepare painting materials in accordance with manufacturer's directions.

B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.

C. Stir materials before application to produce a mixture of uniform density, and stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.

3.04 APPLICATION

A. General: Apply paint in accordance with manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.

1. Apply additional coats when undercoats, stains or other conditions show through final coat of paint, until paint film is of uniform finish, color and appearance. Give special attention to ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.

2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Paint surfaces behind permanently-fixed equipment or furniture with prime coat only before final installation of equipment.

3. Paint back sides of access panels, and removable or hinged covers to match exposed surfaces.

4. Omit first coat (primer) on metal surfaces which have been shop-primed and touch-up painted, unless otherwise indicated.

B. Scheduling Painting: Apply first-coat material to surfaces that have been cleaned, pre-treated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. Allow sufficient time between successive coatings to permit proper drying. Do not re-coat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

C. Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate, to establish a total dry film thickness as indicated or, if not indicated, as recommended by coating manufacturer.

D. Prime Coats: Apply prime coat of material which is required to be painted or finished, and which has not been prime coated by others.

1. Re-coat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn through or other defects due to insufficient sealing.

E. Stipple Eggshell Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling such as laps, irregularity in texture, skid marks, or other surface imperfections.

F. Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other surface imperfections will not be acceptable.

3.05 CLEAN-UP AND PROTECTION

A. Clean-up: During progress of work, remove from site discarded paint materials, rubbish, cans and rags at end of each work day.

1. Upon completion of painting work, clean window glass and other paint-spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using care not to scratch or otherwise damage finished surfaces.

B. Protection: Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.

1. Provide "Wet Paint" signs as required to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.

2. At the completion of work of other trades, touch up and restore all damaged or defaced painted surfaces.

3.06 PAINT SYSTEMS

A. General:

1. Exterior paint systems are specified and identified by number and interior paint systems by letter.

2. Only major areas are scheduled, but miscellaneous and similar items and areas within room or space shall be treated with suitable system.

3. Number of coats scheduled is minimum.

a. Additional coats shall be applied at no additional cost if necessary to completely hide base material, produce uniform color, and provide satisfactory finish result.

4. This specification shall serve as a guide and is meant to establish procedure and quality.

B. Acceptance of Final Colors: Final coat of paint for both exterior and interior shall not be applied until colors have been accepted by the Architect based on Field Samples noted in 1.03.C above.

C. Interior Coating Systems: Provide the following finish coating systems for the various substrates, as shown on the Finish Plan. Provide coats as indicated and sufficient to cover.

1. Gypsum Wallboard:

a. Flat: (ceilings, except as noted)

1) Prime Coat: 220-22 PVA Sealer.

2) Second Coat: One coat 209-00 Alkyd Wall Primer Sealer.

3) Finish Coat: One coat 202-XX Flat Latex Wall Finish.

b. Stipple Eggshell: (walls, except as noted)

1) Prime Coat: One coat 220-22 PVA Sealer.

2) Second Coat: 209-05 Satin Latex Stipple.

3) Finish Coat: One coat 212-XX Eggshell Latex Enamel.

2. Galvanized Metal (trim and access doors, except structural steel, etc.):

a. Semi-gloss:

1) Prime Coat (delete if shop primed): One coat 621-04 BLOX-RUST Alkyd Metal Primer.

2) Two coats 619-6X Ultra-Color Alkyd Semi-Gloss Enamel.

3. Ferrous Metal or Aluminum (miscellaneous)

a. Semi-gloss:

1) Prime Coat (delete if shop primed): 15 Red Oxide Primer

2) Second Coat: 1790 Latex Enamel Undercoater

3) Finish Coat: 4000 Acrylic Latex Enamel

D. Other Coating Systems:

1. Plaster

a. Semi-gloss:

1) Prime Coat: 18 Epoxy Water-Base Primer

2) Finish Coat: 4400 Acrylic Emulsion

END OF SECTION

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PART 1 GENERAL

1.01 SUMMARY

A. This section specifies interior and exterior identification signs, building identification signs, parking and regulatory signs.

B. Interior signs.

1. Toilet Rooms
2. Lobby Entry
3. No Smoking distance at building access doors
4. Accessible Signs at Entries
5. Accessible Parking Stalls
6. Fire Extinguishers
7. Exit Signage

1.03 MANUFACTURER'S QUALIFICATIONS

A. Sign manufacturer shall provide evidence that they regularly and presently manufactures signs similar to those specified in this section as one of their principal products.

1.04 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Manufacturer's Literature:

1. Showing the methods and procedures proposed for the concealed anchorage of the signage system to each surface type.
2. Manufacturer’s printed specifications, anchorage details, installation and maintenance instructions.

C. Shop Drawings:

1. Sign location plan, showing location, type and total number of signs required.
2. Scaled drawings for manufacture and fabrication of sign types. Identify materials, show joints, welds, anchorage, accessory items, mounting and finishes.

D. Samples:

1. All sign colors.

1.05 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.06 DELIVERY, STORAGE, AND PROTECTION

A. Deliver materials to job in manufacturer's original sealed containers with brand name marked thereon. Protect materials from damage.

B. Package to prevent damage or deterioration during shipment, handling, storage and installation. Maintain protective covering in place and in good repair until removal is necessary.

C. Deliver signs only when the site and mounting services are ready for installation work to proceed.

D. Store products in dry condition inside enclosed facilities.

1.07 QUALITY ASSURANCE

A. Regulatory Requirements: Products shall meet requirements of the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and local amendments and modifications.

B. 2019 CBC – California Building Code

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Signs of type, size and design shown on the drawings and as specified.

B. Signs complete with lettering, framing and related components for a complete installation.

C. Provide graphics items as completed units produced by a single manufacturer, including necessary mounting accessories, fittings and fastenings.

D. Do not scale drawings for dimensions. Contractor to verify and be responsible for all dimensions and conditions shown by these drawings. Owner’s Representative to be notified of any discrepancy in drawing, in field directions or conditions, and/or of any changes required for all such construction details.

E. The Sign Contractor, by commencing work of this section, assumes overall responsibility, as part of his warranty of work, to assure that assemblies, components and parts shown or required within the work of the section, comply with the Contract Documents. The

Contractor shall further warrant: That all components, specified or required to satisfactorily complete the installation are compatible with each other and with conditions of installations.

2.02 SIGN MATERIALS

A. General: For items exposed to view on completion, provide materials having flat, smooth surfaces without blemishes. Do not use materials whose surfaces exhibit pitting, seam marks, roller marks, rolled trade names or roughness.

B. Aluminum:

1. Sheet and Plate: ASTM B209.

2. Extrusions and Tubing: ASTM B221.

3. Castings: ASTM B26.

C. Concrete Post Footings: See Section 03 30 00, CAST-IN-PLACE CONCRETE.

D. Steel:

1. Posts: ASTM A53 Grade B, Schedule 40 pipe, Galvanized G90.

2. Sheet: ASTM A1008, ASTM A591 electrolytic zinc coated.

E. Stainless Steel:

1. Sheet: ASTM A480.

2. Posts: ASTM 6063.

3. Billets: ASTM A314.

F. Sign Face: High impact polyester acrylate resins, pressure molded into a single polymerized component, using manufacturer's co-molding process.

G. Tactile Graphics and Text: Provide tactile copy and grade 2 Braille raised 1/32 inch minimum from plaque surface using manufacturer's co-molding process.

1. Provide lettering and graphics precisely formed, uniformly opaque to comply with relevant ADA regulations and requirements indicated for size, style, spacing, content, position, and colors.

H. Colors: High contrast semi-matte integral colors for graphics. All integral resins are U.V. stabilized resins utilizing automotive grade pigments.

I. Traffic Regulatory Signs: Provide smooth sign panel surfaces constructed to remain flat under installed conditions within a tolerance of plus or minus 1/16 inch measured diagonally from corner to corner, complying with the following minimum requirements:

1. Steel Sheet: 0.0625 inch thick, painted.

J. Posts: As shown on the drawings.

1. 3 inch square aluminum tubing, painted.

2. 2 inch round standard pipe, galvanized.

K. Accessories:

1. Anchors and inserts: Provide hot-dipped galvanized anchors and inserts for exterior installations. Use toothed steel devices for drilled in anchors. Furnish inserts to be set into concrete or masonry work. Furnish galvanized through bolts for attachment to posts.

L. Letterforms: All letterforms and arrows shall be vinyl applied graphics. Clear film with printed graphics applied to the sign panel is not acceptable.

M. Symbol of accessibility: Adhesive Mylar symbol at (4) four exterior aluminum doors.

2.03 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Baked Enamel: Apply baked enamel complying with paint manufacturer's written instructions for cleaning, conversion coating and painting.

D. Depth: 0.25-inch thickness.

E. Panel Appearance: Colors per 2019 CBC requirements.

F. Surface Texture: Matte Non-Glare.

G. Letter Style: Sans Serif.

2.04 FABRICATION

A. Design components to allow for expansion and contraction for a minimum material temperature range of 56 °C (100 °F), without causing buckling, excessive opening of joints or over stressing of adhesives, welds and fasteners.

B. Form work to required shapes and sizes, with true curve lines and angles. Provide necessary rebates, lugs and brackets for assembly of units. Use concealed fasteners whenever and wherever possible.

C. Shop fabricate so far as practicable. Joints fastened flush to conceal reinforcement, or welded where thickness or section permits.

D. Contact surfaces of connected members be true. Assembled so joints will be tight and practically unnoticeable, without use of filling compound.

E. Signs shall have fine, even texture and be flat and sound. Lines and miters sharp, arises unbroken, profiles accurate and ornament true to pattern. Plane surfaces be smooth flat and without oil-canning, free of rack and twist. Maximum variation from plane of surface plus or minus 0.3 mm (0.015 inches). Restore texture to filed or cut areas.

F. Level or straighten wrought work. Members shall have sharp lines and angles and smooth surfaces.

G. Extruded members to be free from extrusion marks. Square turns and corners sharp, curves true.

H. Drill holes for bolts and screws. Conceal fastenings where possible. Exposed ends and edges mill smooth, with corners slightly rounded. Form joints exposed to weather to exclude water.

I. Coat aluminum exterior signs with low VOC acrylic polyurethane. Paint coatings are to be UV and graffiti resistant and able to maintain a consistent color and durability.

J. All painted surfaces properly primed. Finish coating of paint to have complete coverage with no light or thin applications allowing substrate or primer to show. Finished surface smooth, free of scratches, gouges, drips, bubbles, thickness variations, foreign matter and other imperfections. All exposed surfaces (front and back including edges) shall be painted.

K. All signs are to be constructed in a manner where front faces are free of exposed fasteners.

L. Pre-assemble items in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for re-assembly and coordinated installation.

M. No signs are to be manufactured until final sign message schedule and location review has been completed by the Owner & forwarded to contractor.

PART 3 EXECUTION

3.01 EXAMINATION

A. Site Verification of Conditions: Verify installation conditions previously established under other sections are acceptable for product installation in accordance with manufacturer's instructions.

B. Scheduling of installation by the client implies that substrate and conditions are prepared and ready for product installation. Proceeding with installation implies installer’s acceptance of substrate and conditions.

3.02 INSTALLATION

A. Install product in accordance with supplier’s instructions.

B. Install product in locations indicated using mounting methods recommended by sign manufacturer and free from distortion, warp, or defect adversely affecting appearance.

C. Install product level, plumb, and at heights indicated.

D. Install product at heights to conform to Americans with Disabilities Act Accessibility Guidelines (ADAAG) and applicable local amendments and regulations.

E. Install signs within the following tolerances and in accordance with manufacturer's recommendations:

1. Interior Signs: Within 1/4 inch vertically and horizontally of intended location.

3.03 CLEANING AND PROTECTION

A. Repair scratches and other damage which might have occurred during installation. Replace components where repairs were made but are still visible to the unaided eye from a distance of 5 feet.

B. Remove temporary coverings and protection to adjacent work areas. Clean installed products in accordance with manufacturer's instructions prior to Owner’s acceptance. Remove construction debris from project in accordance with provisions in Division 1.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. Section includes furnishing and installing a sliding-folding thermally broken, acoustically rated, aluminum-framed glass panel system that includes:

a. Aluminum frame.

b. Threshold.

c. Aluminum framed panels.

d. Sliding-folding and locking hardware.

e. Sound gasketing.

f. Panel Catch.

g. Glass and glazing.

h. Accessories as required for a complete working installation.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 REFERENCES

A. Reference Standards in accordance with Division 01 and current editions from the following:

a. AAMA. American Architectural Manufacturers Association; www.aamanet.org

AAMA 205-15, In-Plant Testing Guidelines for Manufacturers and Independent Laboratories.

AAMA 502, Voluntary Specification for Field Testing of Newly Installed Fenestration Products.

AAMA 611, Voluntary Specification for Anodized Architectural Aluminum.

AAMA 920-11, Specification for Operating Cycle Performance of Side-Hinged Door System.

AAMA 1304, Voluntary Specification of Forced Entry Resistance of Side-Hinged Door Systems.

AAMA 2604, Voluntary Specifications, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.

AAMA/WDMA/CSA 101/1.S.2/A440-17, NAFS, North American Fenestration Standard Specification for Windows, Doors and Skylights.

b. ANSI. American National Standards Institute; www.ansi.org

ANSI Z97.1, Safety Performance Specifications and Methods of Test for Safety Glazing Material Used in Buildings.

c. ASTM. ASTM International; www.astm.org

ASTM C1036, Standard Specification for Flat Glass.

ASTM C1048, Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass.

ASTM E90-09, Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

ASTM E413-16, Classification for Rating Sound Insulation.

ASTM E2068-00 (2016), Standard Test Method for Determination of Operating Force of Sliding Windows and Doors.

ASTM E987-88 (2017), Standard Test Methods for Deglazing Force of Fenestration Products.

ASTM F842, Standard Test Methods for Measuring the Forced Entry Resistance of Sliding Door Assemblies, Excluding Glazing Impact.

d. CPSC. Consumer Product Safety Commission; www.cpsc.gov

CPSC 16CFR-1201, Safety Standard for Architectural Glazing Materials.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate Folding Glass Partition system and framing R.O.

a. Pre-installation Meetings: See Division 01 (Special Provisions) in the specifications.

1.05 SUBMITTALS

A. For Contractor submittal procedures see Division 01 (Special Provisions) in the specifications.

a. Product Data: Submit manufacturer’s printed product literature for each Folding Glass Partition system to be incorporated into the Work. Show performance test results and details of construction relative to materials, dimensions of individual components, profiles, and colors.

b. Product Drawings: Indicate Folding Glass Partition system component sizes, dimensions and framing R.O., configuration, swing panels, direction of swing, stacking layout, typical head jamb, side jambs and sill details, type of glazing material, handle height and field measurements.

c. Manufacturers' Instructions: Submit Owner’s Manual from manufacturer which includes installation instructions, operation, and maintenance data: Identify with project name, location and completion date, and type and size of unit installed.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer capable of providing complete, precision built, engineered, pre-fitted units with a minimum thirty (30) years’ experience in the sale of folding-sliding door systems for large openings in the North American market.

B. Installer Qualifications: Installer experienced in the installation of manufacturer’s products or other similar products for large openings. Installer to provide reference list of at least three (3) projects of similar scale and complexity successfully completed in the last three (3) years.

a. Installer to be trained and certified by manufacturer.

C. Single Source Responsibility: Furnish Folding Glass Partition system materials from one manufacturer for entire Project.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturer’s instructions and recommendations, Special Provisions specifications section, and as follows:

a. Deliver materials to job site in sealed, unopened cartons or crates.

Upon receipt, inspect the shipment to ensure it is complete, in good condition and meets

project requirements.

b. Store material under cover in a clean and dry location, protecting units against weather and defacement or damage from construction activities, especially to the edges of panels.

1.08 FIELD CONDITIONS

A. Field Measurements: Contractor to field verify dimensions of rough openings (R.O.) and threshold depressions to receive sill. Mark field measurements on product drawings submittal.

1.09 WARRANTY

A. Manufacturer Warranty: Provide Folding Glass Partition system manufacturer's standard limited warranty as per manufacturer's published warranty document in force at time of purchase, subject to change, against defects in materials and workmanship.

a. Warranty Period beginning with the earliest of 120 days from Date of Delivery or Date of Substantial Completion:

Rollers and Glass Seal Failure: Ten (10) years

All Other Components: Ten (10) years

1). Exception: Five (5) years if NOT installed by manufacturer's specific system approved or certified trained installer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis-of-Design Manufacturer & Product:

a. Basis-of-Design Manufacturer:

b. Nana Wall Systems, Inc. (www.nanawall.com)

100 Meadow Creek Drive, Corte Madera, CA 94925

Toll Free (800) 873-5673

Telephone: (415) 383-3148

Fax: (415) 383-0312

Email: info@nanawall.com

c. Basis-of-Design Product: NW Acoustical 645, folding glass partition (ALU)

d. Substitution Procedures: See Division 1 specifications section for substitution procedures.

2.02 PERFORMANCE / DESIGN CRITERIA

A. Performance Criteria:

a. Acoustic Performance (STC)

System STC 35 with 1/4-inch (6 mm) STC 35 laminated glass.

b. Swing Panel - Operation / Cycling Performance (AAMA 920): 500,000 cycles

c. Forced Entry (AAMA 1304): Pass

d. Forced Entry Resistance (ASTM F842): Meets Grade 40: +F2

B. Design Criteria:

a. Sizes and Configurations: As indicated by the Drawings for selected number and size of panels, location of swing and folding panels, and number of panels stacking to the left and to the right.

b. Unit Operation: Adjustable sliding & folding hardware with top & bottom tracks

c. Mounting Type: Floor track supported with upper guide track

d. Panel Configuration: Straight

e. Stack Storage Configuration: Outswing type and stack storage outside jamb

f. Sill Type: Minimal surface mounted flush sill - ADA compliant

g. Swing Panel Type: Hinged, Without Entry/Egress panel hinged to side jamb.

h. Panel Pairing Configuration: Bi-folding panels hinged to side jamb (See Drawings)

2.03 MATERIALS

A. Basis of Design: Model NW Acoustical 645. Thermally Broken Aluminum Framed Folding Glass Description: Nominal frame stile width of 3-7/8 inch (99 mm) between folding panels, floor track supported system. Manufacturer's standard thermally broken frame and panel profiles, with head track, side jambs, sill and panels with dimensions as shown on Drawings.

a. System Components: Aluminum frame, threshold, panels, sliding-folding and locking hardware, weather-stripping, glass and glazing, panel catch and thermal break.

b. Panels: Single lite; standard

c. Panel Size (W x H): As indicated on Drawings.

1). Rail Depth: 2-5/8 inch (67 mm)

2). Top Rail and Stile Width: 2-7/8 inch (73 mm)

3). Bottom Rail Width: Manufacturer's standard kickplate on all panels (swing panel included). Height of 10 inches (254 mm)

4). Frame Depth: 2-15/16 inch (74 mm)

5). Head Track Width: 2-13/16 inch (72 mm) standard

6). Side Jamb Width: 2 inches (51 mm)

7). Sill Finish: Black anodized finish.

d. Aluminum Extrusion: AlMgSi0.5 alloy, 6063-T5

1). Thickness: 0.078 inch (2.0 mm) nominal

2). Acoustic Break: 1-1/4 inch (32 mm) wide glass fiber reinforced (GFR) polyamide for panels.

e. Aluminum Finish: One color inside and outside.

1). Finish Type: Dark Anodized Bronze-T

B. Glass and Glazing:

a. Safety Glazing: In compliance with ASTM C1036, ASTM C1048, and ANSI Z97.1.

b. Manufacturer's glass lites, dry glazed with glass stops on the inside.

1). 1/4" (6 mm) STC 35 laminated glass to achieve unit System STC of 35.

C. Locking Hardware and Handles:

a. Pairs of Folding Panels: Provide manufacturer's flat handles and concealed two-point locking hardware operated by 180° turn of handle between each pair. Face applied Surface Mounted

Minimal bolt locking NOT acceptable.

1). Handle Type: Flat handle stainless steel

i. Flat Handle Finish: Black titanium stainless steel, standard

b. Handle Height: 41-3/8 inch (105 cm) centered from bottom of panel.

c. Locking rods with standard end caps at the top and bottom. Rods to have a stroke of 15/16 inch (24 mm)

d. Additional profile cylinders to be **Keyed differently**.

e. Burglary Resistance to be **Standard**.

f. Panel Catch: Panel catch to hold swing panel to adjacent folding panel to prevent incorrect operation when moving the panel.

D. Sliding-Folding Hardware: Provide manufacturer's standard combination sliding and folding hardware with top and bottom tracks and threshold. All running carriages to be with sealed, self-lubricating, double ball bearing multi-rollers. Surface mounted hinges and running carriages NOT acceptable.

a. Lower Running Carriage Carrying Capacity: 250 lb. (120 kg). Lower running carriage provided with two vertical stainless-steel wheels with double row of ball bearings and two horizontal polyamide wheels.

b. Vertical wheels with Gothic arch feature to ride on top of stainless-steel guide track covers over the full length of the sill track. Wheels riding on aluminum surfaces NOT acceptable.

c. Upper guide carriage with two horizontal polyamide guiding wheels. For configurations with pairs of panels that can slide left or right, additional concealed, additional vertical tilt protection hardware.

d. Rollers: **Black** double ball bearing stainless-steel wheels.

e. Hinges: **Black** anodized aluminum with stainless steel security hinge pins and set-screws.

f. Optional Spring-Loaded Pull Handle: For outswing units with larger panel sizes, a spring loaded- pull handle is supplied for ease of closing the system. The pull handle is located above the flat handle. When not in use, the handle lays flat against the adjacent panel and is supplied with bumpers to avoid metal to metal contact.

1). Pull Handle – Brushed satin finish.

E. Sound Gasketing: Manufacturer's double layer EPDM between panels and EPDM gasket, Q-Ion gasket, or brush seal between panel and frame, or brush seals with a two-layer fiberglass reinforced polyamide fin attached at both inner and outer edge of bottom of door panels with a recessed sill or on frame for sealing between panels and between panel and frame.

F. Fasteners: Installation plates for connecting frame components made of stainless steel with sealing cushion to avoid thermal connectivity.

2.04 FABRICATION

A. Folding Glass Wall: Extruded aluminum frame and panel profiles, corner connectors and hinges, sliding and folding hardware, locking hardware and handles, glass and glazing and sound gasketing.

a. Each unit factory pre-assembled and shipped with complete system components and installation instructions.

b. Exposed work to be carefully matched to produce continuity of line and design with all joints.

c. No raw edges visible at joints.

2.05 ACCESSORIES

A. Provide sidelights, transoms, corner posts, or single or double doors as indicated.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examination and Acceptance of Conditions per Section 01 70 00 and as follows:

a. Carefully examine rough openings with Installer present, for compliance with requirements affecting Work performance.

Examine surfaces of openings and verify dimensions; verify rough openings are level, plumb, and square with no unevenness, bowing, or bumps on the floor; and other conditions as required by the manufacturer for readiness to receive Work.

Verify structural integrity of the header for deflection with live and dead loads limited to the lesser of L/720 of the span or 1/4 inch (6 mm). Provide structural support for lateral loads, and both wind load and eccentric load when the panels are stacked open.

b. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. General: Install Folding Glass Partition system in accordance with the Drawings, approved submittals, manufacturer's recommendations, and installation instructions, and as follows:

a. Properly seal around opening perimeter to reduce sound infiltration from surroundings.

b. Securely attach anchorage devices to rigidly fit frame in place, level, straight, plumb, and square. Install frame in proper elevation, plane, and location, and in proper alignment with other work.

c. Install panels, handles, lockset, gasketing and other accessories in accordance with manufacturer's recommendations and instructions.

3.03 FIELD QUALITY CONTROL

A. Field Tests and Inspections per Section 01 40 00 of the following:

a. Verify the Folding Glass Partition system operates and functions properly. Adjust hardware for proper operation.

B. Non-Conforming Work: Repair or replace non-conforming work as directed by the Architect; see General and Supplementary Conditions, and Division 01, General Requirements.

3.04 CLEANING AND PROTECTION

A. Keep units closed and protect Folding Glass Partition installation against damage from construction activities.

B. Remove protective coatings and use manufacturer recommended methods to clean exposed surfaces.

END OF SECTION

PART 1 - GENERAL

1.1 DESCRIPTION

A. This section specifies corner guards.

1.2 RELATED WORK

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.3 QUALITY ASSURANCE

A. Manufacturer’s Qualifications: Manufacturer with a minimum of three (3) years’ experience in providing items of type specified.

1. Obtain wall and door protection from single manufacturer.

B. Installer’s Qualifications: Installers are to have a minimum of three (3) years’ experience in the installation of units required for this project.

1.4 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Shop Drawings: show design and installation details.

C. Manufacturer's Literature and Data:

1. Corner Guards.

D. Manufacturer’s qualifications.

E. Installer’s qualifications.

F. Manufacturer’s warranty.

1.5 DELIVERY AND STORAGE

A. Deliver materials to the site in original sealed packages or containers marked with the name and brand, or trademark of the manufacturer.

B. Protect from damage from handling and construction operations before, during and after installation.

C. Store in a dry environment of approximately 21 degrees C (70 degrees F) for at least 48 hours prior to installation.

1.6 WARRANTY

A. Construction Warranty: Comply with FAR clause 52.246-21 “Warranty of Construction”.

B. Manufacturer Warranty: Manufacturer shall warranty their wall and door protection for a minimum of five (5) years from date of installation and final acceptance by the

Government. Submit manufacturer warranty.

1.7 APPLICABLE PUBLICATIONS

A. publications listed below form a part of this specification to extent referenced. publications are referenced in text by basic designation only.

B. ASTM International (ASTM):

A240/A240M-20	Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and For General Applications
E84-20	Surface Burning Characteristics of Building Materials

C. American Architectural Manufacturers Association (AAMA):

611-14	Voluntary Specification for Anodized Architectural Aluminum

D. Code of Federal Regulation (CFR):

40 CFR 59(2020) Subpart D National Volatile Organic Compound Emission Standards for Architectural Coatings

E. The National Association of Architectural Metal Manufacturers (NAAMM):

AMP 500-06	Metal Finishes Manual

F. National Fire Protection Association (NFPA):

80-2019	Standard for Fire Doors and Other Opening Protectives

G. Underwriters Laboratories Inc. (UL):

Annual Issue	Building Materials Directory

PART 2 - PRODUCTS

2.1 MATERIALS

A. Stainless Steel: A240/A240M, Type 304.

1. 16 gauge

2.2 CORNER GUARDS

A. Basis of Design or approved equal:

1. IPC Door and Wall Protection Systems, InPro Corporation; Stainless Steel Corner Guard:

a. 2” (51 mm) wing, 1/8” corner radius.

b. Height: See Specification Section 09 06 00 – Schedule for Finishes

2.3 FASTENERS AND ANCHORS

A. Provide fasteners and anchors as required for each specific type of installation.

B. Where type, size, spacing or method of fastening is not shown or specified in construction documents, submit shop drawings showing proposed installation details.

2.4 FINISH

A. Stainless Steel: In accordance with NAAMM AMP 500 finish Number 4.

PART 3 - INSTALLATION

3.1 STAINLESS STEEL CORNER GUARDS

A. Mount guards on external corners of interior walls, partitions and columns as shown on construction documents.

B. Where corner guards are installed on walls, partitions or columns finished with plaster or ceramic tile, anchor corner guards as shown on construction documents. Coat back surfaces of corner guards, where shown on construction documents, with a non-flammable, sound deadening material. Corner guards to overlap finish plaster surfaces.

C. Where corner guards are installed on gypsum board, clean surface and anchor guards with a neoprene solvent-type contact adhesive specifically manufactured for use on gypsum board construction. Remove excess adhesive from around edge of guard and allow curing undisturbed for 24 hours.

END OF SECTION

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PART 1 GENERAL

1.01 SUMMARY

A. Furnish labor, materials, equipment and services to install toilet and related accessories and components as shown on the Drawings, as specified herein and as required for a complete and proper installation, including, but not limited to the following:

1. Toilet room accessories.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies: Accessories and their installation shall conform to applicable requirements for the disabled.

B. Design Criteria: Grab bars shall be capable of withstanding a force of 900 pounds, minimum, when installed in accordance with the manufacturer's instructions.

C. Accessories shall be the product of a single manufacturer unless otherwise specified.

1.04 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Product Data: Manufacturer's descriptive and technical data and illustrations, marked to indicate specific product types, variations, and materials.

C. Shop Drawings: Indicate layouts and installation details necessary for proper preparation of toilet partitions and other construction supporting grab bars or other accessory items.

D. Test data or certification that grab bars meet the specified design criteria.

E. Maintenance data, operating instructions, and keys required for each type of accessory and lock.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Quality designation and guarantee label shall be attached to each mirror, or manufacturer's certification that mirrors meet specified requirements shall be submitted.

B. Protection:

1. Maintain protective coatings or coverings on units until installation is complete.

2. Remove protective coverings at final cleanup of installation.

C. Handle so as to prevent damage to finished surfaces.

D. Store materials in original protective packaging to prevent soiling, physical damage, or wetting.

1.06 PROJECT CONDITIONS

A. Coordinate submission of installation instructions so that backing, blocking, framing and formwork can be properly installed, and work of other trades will not be delayed.

1.07 WARRANTY

A. Warrant mirrors for 5 years against silver spoilage.

PART 2 PRODUCTS

2.01 MATERIALS

A. Stainless Steel Sheet: ASTM A167, commercial grade, Type 304, standard gage.

B. Stainless Steel Tubing: ASTM A269, commercial grade, seamless welded.

C. Sheet Steel: ASTM A366, cold-rolled stretcher leveled; with G90 galvanized coating.

D. Mirrors: ¼ inch thick polished float glass, silver-coated and electrolytically copper-plated.

1. Protect edges with vinyl tape or other protective coating.

2. Channel Edged

E. Adhesive: Epoxy type contact cement.

F. Attachment Devices: Hot dip galvanized; furnish backing plates, brackets, and hardware required for a complete installation as recommended by accessory manufacturer for component and substrate.

1. Fastening shall be concealed and theft-proof when available.

G. Locks: Provide locks and furnish keys for standard lockable items.

H. Grab Bars: 1-1/4 to 1-1/2 inches O.D., mandrel bent, with welded end flanges, exposed mounting, and peened or other approved safety-grip finish; anchor plates for each bar.

2.02 FINISHES

A. Provide manufacturer’s finish for each item indicated in accessory schedule, stainless-steel where available.

1. Where there are choices of available finishes, not including satin stainless steel, provide chart for Architect's selection.

B. Exposed Finishes: Stainless steel No. 4, satin finish; satin chrome finish acceptable where stainless steel not available for accessory item scheduled.

2.03 ACCESSORY SCHEDULE

A. Model numbers indicated in the Schedule below are those of Bobrick Washroom Equipment, Inc. (unless noted otherwise) and are used to establish a standard of quality, utility. Equivalent products of other manufacturers may also be acceptable, subject to conformance with the requirements specified herein and indicated. All accessories brushed stainless steel, unless otherwise noted.

1. Provide one item for each location indicated on Drawings.

2. All items shall be satin finish, unless otherwise specified or indicated.

B. Schedule (itemized below as referenced on Drawings):

1. B-3944-130, Towel Mate – Semi Recessed combination towel dispenser waste receptacle (PTD).

2. B-3013 – Recessed Toilet-Seat-Cover Dispenser. (SCD)

3. B2888 – Surface Mounted Multi-Roll Toilet Tissue Dispenser. (TPD)

4. B-5806 – 1-1/4 inch (32mm) Diameter Stainless Steel Grab Bars with Snap-Flange Cover. (GB1, GB2)

5. B-165 – Mirror with Stainless Steel Channel Frame. Rectangular. (MR1)

6. B254 – Partition Mounted Sanitary Napkin Disposal. (SND)

7. B2112 – Surface Mounted 40 oz Soap Dispenser. (SD)

8. Robe Hook (RH)

9. ASI Model 0487 - Combination Toilet Paper Holder, Dispenser and Seat Cover Dispenser

10. Shower Seat – "L" Shaped and sized per CBC Chapter 11B.

2.04 FABRICATION

A. Corners: Weld and grind smooth; leave no open miters.

B. Form exposed surfaces from one sheet of stock, free of joints.

C. Provide steel anchor plates and anchor components for installation on building finish.

D. Form surfaces flat without distortion; maintain flat surfaces without scratches or dents.

E. Back paint components where contact is made with building finishes, to prevent electrolysis.

F. Hot-dip galvanize components; package complete with anchors and fittings.

G. Locked dispensing units: Key alike for all accessories.

PART 3 EXECUTION

3.01 EXAMINATION

A. Check openings scheduled to receive recessed units for correct dimensions, plumbness of blocking or frames, and preparation that would affect installation of accessories.

B. Check areas to receive surface-mounted units for conditions that would affect quality and execution of Work.

C. If unsatisfactory conditions exist, do not commence the installation until such conditions have been corrected.

3.02 INSTALLATION

A. Install accessories in locations and at heights indicated.

B. Install true, plumb and level, securely and rigidly anchor accessories to substrate in accordance with manufacturer's instructions.

C. Use tamper-proof, security type fasteners.

D. Attach grab bars to backing installed in wall to withstand loads prescribed by CBC.

E. Install accessories in strict dimensional tolerance to CBC and Accessibility codes, diagrams and standards.

3.03 ADJUSTMENT AND CLEANING

A. Remove protective coatings in accordance with the manufacturer's instructions.

B. Adjust accessories for proper operation.

C. After completion of installation, clean and polish all exposed surfaces.

D. Deliver keys and instruction sheets to the Owner’s Representative.

3.04 COMPLETION

A. When complete, accessories shall be set plumb and level, accurately aligned, and securely attached.

B. Exposed surfaces shall be clean and free from scratches, dents, tool marks, stains, discoloration, and other defects and damage.

END OF SECTION

PART 1 GENERAL

1.01 DESCRIPTION

A. This section covers recessed fire extinguisher cabinets.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Manufacturer's Literature and Data: Fire extinguisher cabinet including installation instruction and rough opening required.

1.04 APPLICATION PUBLICATIONS

The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

A. American Society of Testing and Materials (ASTM):

D4802-10.....Poly (Methyl Methacrylate) Acrylic Plastic Sheet

PART 2 PRODUCTS

2.01 FIRE EXTINGUISHER CABINET

A. Semi-Recessed type with flat trim. See Section 09 06 00 as reference.

2.02 FABRICATION

A. Form body of cabinet from 0.9 mm (0.0359 inch) thick sheet steel.

B. Fabricate door and trim from 1.2 mm (0.0478 inch) thick sheet aluminum with all face joints fully welded and ground smooth.

1. Glaze doors with 6 mm (1/4 inch) thick ASTM D4802, clear acrylic sheet, Category B-1, Finish

2. Design doors to open 180 degrees.

3. Provide continuous hinge, pull handle, and adjustable roller catch.

2.03 FINISH

A. Finish interior of cabinet body with baked-on semigloss white enamel.

B. Finish door, frame with manufacturer's standard clear satin anodized aluminum.

PART 3 EXECUTION

A. Install fire extinguisher cabinets in prepared openings and secure in accordance with manufacturer's instructions.

B. Install cabinet so that bottom of cabinet is 975 mm (39 inches) above finished floor.

C. Install signage as required to indicate obscured extinguisher locations.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. Provide seismic restraint in accordance with the requirements of this section in order to maintain the integrity of nonstructural components of the building so that they remain safe and functional in case of seismic event.

B. Definitions: Non-structural building components are components or systems that are not part of the building's structural system whether inside or outside, above or below grade. Non-structural components of buildings include:

1. Electrical Elements: Power and lighting systems; selector and controller panels; fire protection and alarm systems; and telephone and communication systems.

2. Mechanical Elements: Heating, ventilating, and air-conditioning systems; roof drainage piping; sprinkler systems.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 QUALITY CONTROL

A. Shop-Drawing Preparation:

1. Have seismic-force-restraint shop drawings and calculations prepared by a professional structural engineer experienced in the area of seismic force restraints. The professional structural engineer shall be registered in California.

2. Submit design tables and information used for the design-force levels, stamped and signed by a professional structural engineer registered in California.

B. Coordination:

1. Do not install seismic restraints until seismic restraint submittals are approved by the Owner.

2. Coordinate and install trapezes or other multi-pipe hanger systems prior to pipe installation.

C. Seismic Certification: Permanent equipments and components are to have Special Seismic Certification in accordance with requirements of section 13.2.2 of ASCE 7, and shall comply with section 13.2.6 of ASCE 7.

1.04 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Submit a coordinated set of equipment anchorage drawings prior to installation including:

1. Description, layout, and location of items to be anchored or braced with anchorage or brace points noted and dimensioned.

2. Details of anchorage or bracing at large scale with all members, parts brackets shown, together with all connections, bolts, welds etc. clearly identified and specified.

3. Numerical value of design seismic brace loads.

4. For expansion bolts, include design load and capacity if different from those specified.

C. Submit prior to installation, a coordinated set of bracing drawings for seismic protection of piping, with data identifying the various support-to-structure connections and seismic bracing structural connections, include:

1. Single-line piping diagrams on a floor-by-floor basis. Show all suspended piping for a given floor on the same plain.

2. Type of pipe (Copper, steel, cast iron, insulated, non-insulated, etc.).

3. Pipe contents.

4. Structural framing.

5. Location of all gravity load pipe supports and spacing requirements.

6. Numerical value of gravity load reactions.

7. Location of all seismic bracing.

8. Numerical value of applied seismic brace loads.

9. Type of connection (Vertical support, vertical support with seismic brace etc.).

10. Seismic brace reaction type (tension or compression): Details illustrating all support and bracing components, methods of connections, and specific anchors to be used.

D. Submit prior to installation, bracing drawings for seismic protection of suspended ductwork and suspended electrical and communication cables, include:

1. Details illustrating all support and bracing components, methods of connection, and specific anchors to be used.

2. Numerical value of applied gravity and seismic loads and seismic loads acting on support and bracing components.

3. Maximum spacing of hangers and bracing.

4. Seal of registered structural engineer responsible for design.

E. Submit design calculations prepared and sealed by the registered structural engineer specified above in paragraph 1.03A.

1.05 APPLICABLE PUBLICATIONS

A. The Publications listed below (including amendments, addenda revisions, supplements and errata) form a part of this specification to the extent referenced. The publications are referenced in text by basic designation only.

B. American Society of Civil Engineers (ASCE 7) Latest Edition.

C. California Building Code (CBC) 2019

E. National Uniform Seismic Installation Guidelines (NUSIG)

F. Sheet Metal and Air Conditioning Contractors National Association (SMACNA): Seismic Restraint Manual - Guidelines for Mechanical Systems, 1998 Edition and Addendum

1.06 REGULATORY REQUIREMENT

A. CBC, 2019.

B. Exceptions: The seismic restraint of the following items may be omitted:

1. Equipment weighing less than 400 pounds, which is supported directly on the floor or roof.

2. Equipment weighing less than 20 pounds, which is suspended from the roof or floor or hung from a wall.

3. Gas piping less than 2 ½ inches inside diameter.

4. Piping in boiler plants and equipment rooms less than 1 ¼ inches inside diameter.

5. All other piping less than 2 ½ inches inside diameter, except for automatic fire suppression systems.

6. All piping suspended by individual hangers, 12 inches or less in length from the top of pipe to the bottom of the support for the hanger.

7. All electrical conduits, less than 2 ½ inches inside diameter.

8. All rectangular air handling ducts less than six square feet in cross sectional area.

9. All round air handling ducts less than 28 inches in diameter.

10. All ducts suspended by hangers 12 inches or less in length from the top of the duct to the bottom of support for the hanger.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.01 CONSTRUCTION, GENERAL

A. Provide equipment supports and anchoring devices to withstand the seismic design forces, so that when seismic design forces are applied, the equipment cannot displace, overturn, or become inoperable.

B. Provide anchorages in conformance with recommendations of the equipment manufacturer and as shown on approved shop drawings and calculations.

C. Construct seismic restraints and anchorage to allow for thermal expansion.

3.02 EQUIPMENT RESTRAINT AND BRACING

A. See drawings for equipment to be restrained or braced.

3.03 MECHANICAL DUCTWORK AND PIPING; ELECTRICAL BUSWAYS, CONDUITS, AND CABLE TRAYS; AND TELECOMMUNICATION WIRES AND CABLE TRAYS

A. Support and brace mechanical ductwork and piping; conduits and cable trays; and telecommunication wires and cable trays to resist directional forces (lateral, longitudinal and vertical).

B. Brace duct and breeching branches with a minimum of 1 brace per branch.

C. Provide supports and anchoring so that, upon application of seismic forces, piping remains fully connected as operable systems which will not displace sufficiently to damage adjacent or connecting equipment, or building members.

D. Piping Connections: Provide flexible connections where pipes connect to equipment. Make the connections capable of accommodating relative differential movements between the pipe and equipment under conditions of earthquake shaking.

3.04 CEILINGS AND LIGHTING FIXTURES

A. At regular intervals, laterally brace suspended ceilings against lateral and vertical movements, and provide with a physical separation at the walls.

B. Independently support and laterally brace all lighting fixtures.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes: Holeless Hydraulic Elevator for a full and complete code compliant and operational elevator and associated building systems, including electrical, mechanical, fire protection, plumbing, shaft, structural and special systems. Includes smoke protection system at elevator hoist way openings.

B. Products Supplied But Not Installed Under this Section:

1. Pit Ladder

2. Inserts mounted in concrete walls at pit and steel tube column supports at shaft partition walls for rail attachments.

3. Any additional items required to meet operation and code requirements.

C. Work Supplied Under Other Sections:

1. Temporary lighting, including temporary lighting in hoistway for machine space with switch located in hoistway on the strike jamb side of top landing door.

2. Hoistway ventilation shall be in accordance with local and national building code requirements.

3. Guide Rail Support shall be structurally adequate to extend from pit floor to top of hoistway, with spans in accordance with requirements of authority having jurisdiction and final layouts.

4. Removable barricades at all hoistway openings, in compliance with OSHA 29 CFR 1926.502 in addition to any local code requirements.

5. Lifeline attachments capable of withstanding 5000 lb load in accordance with OSHA 29 CFR 1926.502. Provide a minimum of 2 at the top, front of each hoistway.

6. Pit lighting: Fixture with switch and guards. Provide illumination level equal to or greater than that required by ASME A17.1/CSA B44 2000, or applicable version.

7. Control space lighting with switch. Coordinate switch with lighting for machine space as allowable by code.

8. Electrical service and disconnects.

9. Ferromagnetic metal wrapped MDF header panel over elevator door.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 INDUSTRY AND GOVERNMENT STANDARDS:

A. ICC/ANSI A117.1 Accessible and Usable Buildings and Facilities

B. ADAAG - Accessibility Guidelines for Buildings and Facilities

C. ANSI/NFPA 70, National Electrical Code

D. ANSI/NFPA 80, Standard for Fire Doors and Fire Windows

E. ASME/ANSI A17.1, Safety Code for Elevators and Escalators.

F. CBC, California Building Code, 2019

G. American Society of Mechanical Engineers (ASME)

A17.2.....Inspectors Manual for Electric Elevators and Escalators

H. National Fire Protection Association:

NFPA 72.....National Fire Alarm and Signaling Code

NFPA 252.....Fire Test of Door Assemblies

I. NFPA 1784, ASTM E84 and UL 864.

1.04 DESCRIPTION OF ELEVATOR

A. Elevator Equipment: Holeless Hydraulic Elevator

B. Equipment Control: Per selected manufacturer

C. Quantity of Elevators: 1

D. Landings: 2

E. Openings: 2 Front Openings

F. Travel: 12 feet 0 inches, plus or minus

G. Rated Capacity: 2500 lbs

H. Rated Speed: 100 fpm

I. Clear Inside Dimensions (W x D): Per plan

J. Cab Height: 8' 0"

K. Clear height under suspended ceiling: Cab Height + 60" to Max 16

L. Entrance Width and Type: Side per plan

M. Entrance Height: 7' 0" Entrance Width: 3’ 0” minimum

N. Main Power Supply: 208, 480 Volts + 10%, three-phase, per electrical drawings controls specification.

O. Operation: Simplex

P. Machine Location: Machine Room

Q. Control Space Location: Machine Room

R. Maintenance Service Period: 12 months

1.05 PERFORMANCE REQUIREMENTS

A. The elevators shall be capable of meeting the highest standards of the industry and specifically the following:

1. Contract speed is high speed in either direction of travel with rated capacity load in the elevator. Speed variation under all load conditions, regardless of direction of travel, shall not vary more than five (5) percent.

2. The controlled rate of change of acceleration and retardation of the car shall not exceed 0.1G per second and the maximum acceleration and retardation shall not exceed 0.2G per second.

3. Starting, stopping, and leveling shall be smooth and comfortable without appreciable steps of acceleration and deceleration.

B. The door operator shall open the car door and hoistway door simultaneously at 2.5-feet

C. Floor level stopping accuracy shall be within 3 mm (1/8 in.) above or below the floor, regardless of load condition.

D. System Performance

1. Vertical Vibration (maximum): 15-17 mg

2. Horizontal Vibration (maximum): 10-12 mg

3. Jerk Rate (maximum): 3.3 – 5.25 ft/sec3

4. Acceleration (maximum) 1.6 – 2.6 ft/sec2

5. In Car Noise: = 55 dB(A)

6. Leveling Accuracy: ±0.1 inches

7. Starts per hour (maximum): 240

1.06 SUBMITTALS

A. Comply with Section 01 13 00 - Submittal Procedures.

B. Product Data: Submit manufacturer's product literature for each proposed system.

1. Cab design, dimensions and layout.

2. Layout, finishes, and accessories and available options.

3. Controls, signals and operating system.

4. Color selection charts for cab and entrances.

5. Furnish certificates as required under: Paragraph "QUALIFICATIONS".

C. Shop Drawings:

1. Clearances and travel of car.

2. Clear inside hoistway and pit dimensions.

3. Location and layout of equipment and signals.

4. Car, guide rails, buffers and other components in hoistway.

5. Maximum rail bracket spacing.

6. Maximum loads imposed on building structure.

7. Hoist beam requirements.

8. Location and details of hoistway door and frames.

9. Electrical characteristics and connection requirements.

10. Controller

11. Starters and Overload Current Protection Devices.

12. Electric Door Operator; HP rating and RPM of motor.

13. Hoistway Door Interlocks.

14. Car Buffers; maximum and minimum rated load, maximum rated striking speed and stroke.

15. Cab Ventilation Unit; HP rating and CFM rating.

16. Sill details including sill support.

17. Door operator, infrared curtain units.

18. Cuts or drawings showing details of controllers and supervisory panels.

19. Door opening protection system.

D. WIRING DIAGRAMS

1. Provide three complete sets of field wiring and straight line wiring diagrams showing all electrical circuits in the hoistway, machine room and fixtures. Install one set coated with an approved plastic sealer and mounted in the elevator machine room as directed by the Owner.

2. In the event field modifications are necessary during installation, diagrams shall be revised to include all corrections made prior to and during the final inspection. Corrected diagrams shall be delivered to the Owner within 30 days of final acceptance.

3. Provide the following information relating to the specific type of microprocessor controls installed:

a. Owner's information manual, containing job specific data on major components, maintenance, and adjustment.

b. System logic description.

c. Complete wiring diagrams needed for field troubleshooting, adjustment, repair and replacement of components. Diagrams shall be base diagrams, containing all changes and additions made to the equipment during the design and construction period.

d. Changes made during the warranty period shall be noted on the drawings in adequate time to have the finalized drawings reproduced for mounting in the machine room no later than six months prior to the expiration of the warranty period.

E. Operation and maintenance data:

1. Provide manufacturer's standard maintenance and operation manual.

F. Diagnostic Tools

1. Prior to seeking final acceptance for the completed project as specified by the Contract Documents, the Elevator Contractor shall deliver to the Owner any specialized tool(s) that may be required to perform diagnostic evaluations, adjustments, and/or parametric software changes and/or test and inspections on any piece of control or monitoring equipment installed. This shall include any specialized tool(s) required for monitoring, inspection and/or maintenance where the means of suspension other than conventional wire ropes are furnished and installed by the Elevator Contractor. Any and all such tool(s) shall become property of the Owner. Any diagnostic tool provided to the Owner by the Elevator Contractor shall be configured to perform all levels of diagnostics, systems adjustment and parametric software changes which are available to the Elevator Contractor. In those cases where diagnostic tools provided to the Owner require periodic recalibration/or re-initiation, the Elevator Contractor shall perform such tasks at no additional cost to the Owner for a period equal to the term of the maintenance agreement from the date of final acceptance of the competed project During those intervals in which the Owner might find it necessary to surrender a diagnostic tool for re-calibration, re-initiation, or repair, the Elevator Contractor shall provide a temporary replacement for the tool at no additional cost to the Owner. The Elevator Contractor shall deliver to the Owner, printed instructions for the proper use of any tool that may be necessary to perform diagnostic evaluations, system adjustment, and/or parametric software changes on any unit of microprocessor-based elevator control equipment and means of suspension other than standard elevator steel cables furnished and install by the Elevator Contractor. Accompanying the printed instructions shall be any and all access codes, password, or other proprietary information that is necessary to interface with the microprocessor-control equipment.

1.07 QUALITY ASSURANCE

A. Manufacturer: Minimum of fifteen years experience in the fabrication, installation and service of elevators of the type and performance of the specified. The manufacturer shall have a documented quality assurance program.

B. Installer: The equipment manufacturer shall install the elevator.

C. Inspection and Testing: In accordance with requirements of local jurisdiction, obtain required permits, inspections and tests.

1.08 DELIVERY, STORAGE AND HANDLING

A. Comply with manufacturer's recommendations for delivery, storage and handling.

1.09 WARRANTY

A. Submit all labor and materials furnished in connection with elevator system. The one year Warranty shall commence after final inspection, completion of performance test, and upon full acceptance of the installation and shall concur with the guarantee period of service.

1.10 MAINTENANCE SERVICE

A. The elevator manufacturer shall provide maintenance service consisting of regular examinations and adjustments of the elevator equipment for a period of 12 months after date of substantial completion. Replacement parts shall be produced by the original equipment manufacturer.

B. Maintenance service be performed during regular working hours of regular working days and shall include emergency 24-hour call back service.

C. Maintenance service shall not include adjustments, repairs or replacement of parts due to negligence, misuse, abuse or accidents.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Provide holeless hydraulic elevator systems subject to compliance with the design and performance requirements of this specification.

1. Basis of Design: Schindler 330A.

2. Other acceptable holeless hydraulic elevator manufacturer with minimum 15 years experience in manufacturing, installing, and servicing elevators of the type required for the project.

2.02 PUMP UNIT ASSEMBLY

A. Completely integrate the pump unit for the control of the elevator and self-contain in a unit fabricated of structural steel. The unit shall consist of a hydraulic fluid pump driven by an induction motor together with oil control valves, piping, etc. Enclose unit on four open sides of the power unit frame with not less than 16 gauge steel removable panel sections. Provide a minimum 50 mm (2 in.) air space between the top of the panels and bottom of tank. Line panels on the interior side with one-inch rigid acoustical insulation board.

B. Control valves shall be electronically controlled. Hydraulic fluid flow shall be controlled to insure speed variation of not more than five (5) percent under all load conditions.

C. Hydraulic system working pressure shall not exceed 500 psi under any load condition.

D. Pump shall be positive displacement, rotary screw type, specifically designed for hydraulic elevator service, having a steady discharge without pulsation to give smooth and quiet operation. Pump output shall be capable of lifting elevator car with

rated capacity, with a speed variation of no more than five (5) percent between no load and full load. Pump shall operate under flooded suction in an accurately machined case with the clearance required to assure maximum efficiency. Hydraulic fluid by-pass shall discharge directly into storage tank.

E. Motor shall be squirrel-cage, drip proof, ball bearing, and induction type, with a synchronous speed not in excess of 1800 RPM. Design motor specifically for elevator service, not to exceed nameplate full load current by more than 10% and be continuously rated 120 starts per hour without exceeding a rise of 40 degrees C. Include closed transition SCR soft start.

F. Connect motor and pump with multiple V-belt. Size belts and sheaves for duty involved and design to prevent any metallic contact between motor and pump shaft. Provide isolation units of rubber in shear to prevent transmission of pump and motor vibration to the building. Install expanded metal sheave guard that can be easily removed for servicing and inspection.

G. Hydraulic equipment may be installed within the oil storage tank if applicable for elevator size, speed, and duty rating.

H. Design motor, pump, tank, and piping to accommodate future travel, if specified.

2.03 HYDRAULIC SYSTEM

A. Construct the storage tank of sheet steel, welded construction, and a steel cover with suitable means for filling, a minimum one-inch protected vent opening, an overflow connection, and a valve drain connection. Tank shall act as a storage tank only, and sized to pass through machine room door as shown on drawings. Provide marked gauge to monitor hydraulic fluid level. Tank shall be of capacity to hold volume of hydraulic fluid required to lift elevator to top terminal landing, plus a reserve of not less than ten gallons. Provide a baffle in the bottom of the tank to prevent entry of any sediment or foreign particles into hydraulic system. Baffle shall also minimize aeration of hydraulic fluid. Permissible minimum hydraulic fluid level shall be clearly indicated. Hydraulic fluid shall be of good grade to assure free flow when cool, and have minimum flash point of 400 degrees F. Provide initial supply of hydraulic fluid for operation of elevator.

1. Thermostatically control the viscosity of the hydraulic fluid with thermal cooling unit and temperature thermostat to maintain the fluid temperature in the reservoir, pump and valves at a constant operating viscosity.

2. Provide a data plate on the tank framing indicating the characteristics of the hydraulic fluid used.

B. Furnish and install connections between the storage tank, pump, muffler, operating valves, and cylinder complete with necessary valves, pipe supports, and fittings. All connections between the discharge side of the pump, check valve, muffler, cylinder, lowering valves shall be of schedule 40 steel with threaded, flanged, or welded mechanical couplings. Size of pipe and couplings between cylinder and pumping unit shall be such that fluid pressure loss is limited to 10 percent.

C. Do not subject valves, piping, and fittings to working pressure greater than those recommended by the manufacturer.

D. Support all horizontal piping. Place hangers or supports within 305 mm (12 in.) on each side of every change of direction of pipeline and space supports not over 3.0 meters (10 ft) apart. Secure vertical runs properly with iron clamps at sufficiently close intervals to carry weight of pipe and contents. Provide supports under pipe to floor.

1. Provide all piping from machine room to hoistway, including necessary supports or hangers. If remote piping is underground or in damp inaccessible areas, install hydraulic piping thru PVC sleeve pipe.

E. Install pipe sleeves where pipes pass through walls or floors. Set sleeves during construction. After installation of piping, equip the sleeves with snug fitting inner liner of either glass or mineral wool insulation.

F. Install blowout-proof, non-hammering, oil-hydraulic muffler in the hydraulic fluid supply pressure line near power unit in machine room. Design muffler to reduce to a minimum any pulsation or noises that may be transmitted through the hydraulic fluid into the hoistway.

G. Arrange control valves to operate so hydraulic fluid flow will be controlled in positive and gradual manner to ensure smooth starting and stopping of elevator.

H. Provide safety check valve between cylinder and pump connection which will hold elevator with specified load at any point when pump stops or pressure drops below minimum operating levels.

I. Provide an automatic shut-off valve in the oil supply line at the cylinder inlet. Weld pipe protruding from cylinder at inlet and thread to receive shut-off valve. Activate the automatic shut-off valve when there is more than a ten percent increase in high speed in the down direction. When activated, this device shall immediately stop the descent of the elevator and hold the elevator until it is lowered by use of the manual lowering feature of the valve. Arrange the manual lowering feature of the automatic shut-off valve to limit the maximum descending speed of the elevator to 15 fpm. The exposed adjustments of the automatic shut-off valve shall have their means of adjustment sealed after being set to their correct position.

J. Provide external tank shut-off valve to isolate hydraulic fluid during maintenance operations.

K. Provide all pump relief and other auxiliary valves to comply with the requirements of the ASME A17.1 Section 3.19 and to insure smooth, safe, and satisfactory operation of elevator.

L. Furnish and adjust bypass and relief valve in accordance with ASME A17.1 Rule 3.19.4.2.

M. Install check valve to hold the elevator car with rated load at any point when the pump stops.

N. Provide shut-off valves in the pit near the cylinder and in the machine room capable of withstanding 150 percent of design operating pressure. Each manual valve shall have an attached handle.

O. Conveniently locate the manual lowering valve, easily accessible, and properly identified with a red arrow and not concealed within the storage tank. Mark the operating handle in red.

P. Provide a low oil control feature which shall shut off the motor and pump and return the elevator to the lowest landing. Upon reaching the lowest landing, doors will open automatically allowing passengers to leave the car. Then doors shall close. All control buttons, except the door open button, shall be made ineffective.

Q. Provide oil-tight drip pan for assembled pumping unit, including storage tank. Pan shall be not less than 16 gauge sheet steel, with one-inch sides.

R. The entire hydraulic system, including muffler, shall be tested to withstand a pressure equal to twice the calculated working pressure.

S. Submit certification that test has been performed.

2.04 EQUIPMENT: HOISTWAY COMPONENTS

A. Materials, devices and equipment furnished shall be of current production by manufacturers regularly engaged in the manufacture of such items. Items not meeting this requirement, but meet technical specifications which can be established through reliable test reports or physical examination of representative samples, will be considered.

B. When two or more devices of the same class of materials or equipment are required, these units shall be products of one manufacturer.

C. Manufacturers of equipment assemblies which include components made by others shall assume complete responsibility for the final assembled unit.

D. Motor nameplates shall state manufacturers' name, rated horsepower, speed, volts, amperes and other characteristics required by NEMA Standards and shall be securely attached to the item of equipment in a conspicuous location.

E. The elevator equipment, including controllers, door operators, and supervisory system shall be non-proprietary, the product of manufacturers of established reputation, provided such items are capably engineered and produced under coordinated specifications to ensure compatibility with the total operating system. Mixing of manufactures related to a single system or group of components shall be identified in the submittals.

F. Where key operated switches are furnished in conjunction with any component of this elevator installation, furnish four (4) keys for each individual switch or lock. Provide different key tumblers for different switch and lock functions. Each and every key shall have a tag bearing a stamped or etched legend identifying its purpose. Barrel key switches are not acceptable, except where required by code.

2.05 EQUIPMENT: HOISTWAY COMPONENTS

A. Buffers: Car and Counterweight

B. Hoistway Operating Devices:

1. Emergency stop switch in the pit

2. Terminal stopping switches.

3. Emergency stop switch on the machine

4. Emergency opening smoke protection system.

C. Positioning System: System consisting of magnets and proximity switches.

D. Guide Rails and Attachments: Steel rails with brackets and fasteners.

E. The counterweight frame will be equipped with a safety device designed to stop the counterweight in the event of actuation of the over speed governor.

2.06 EQUIPMENT: HOISTWAY ENTRANCES

A. Hoistway Entrances

1. Frames: Sheet steel, bolted construction.

2. Typical Sill Finish: Mill Aluminum

3. Lobby Sill Finish: Mill Aluminum

4. Doors: Hollow metal construction with vertical internal channel reinforcements.

5. Fire Rating: Entrance and doors shall be UL fire-rated for 1-1/2 hour.

6. Lobby Entrance Finish: Ferromagnetic. Min. 14 ga with 2-inch wide flat profile.

7. Entrance Markings Jamb Plates: Provide standard entrance jamb tactile markings on both jambs, at all floors.

8. Plate Mounting: Refer to manufacturer drawings.

2.07 EQUIPMENT: CAR COMPONENTS

A. Car Frame: Provide car frame with adequate bracing to support the platform and car enclosure.

B. Car Safeties: Device will be provided and mounted under the car platform, securely bolted to the Car Frame. The safety will be actuated by a centrifugal governor mounted at the top of the hoistway. The Safety is designed to operate in case the car attains excessive descending speed.

C. Platform, Heavy Loading Type: The car platform shall be arranged to accommodate one-piece loads weighing up to 25% of the rated capacity.

D. Car Guides: Provide guide-shoes mounted to top and bottom of both car and counterweight frame. Each roller guide assembly shall be arranged to maintain constant contact on the rail surfaces. Provide retainers in areas with Seismic design requirements.

E. Canopy: Reinforced 16-guage milled steel. White baked enamel finish standard.

F. Cab Finish:

1. Car Wall Panels: Plastic Laminate

2. Baseboard: Stainless Steel - Satin

3. Ceiling and Lighting:

a. Round LED Down Light Drop Ceiling - LF-88: Satin Finished Stainless Steel three panel suspended ceiling with two holes per panel for Round LED lights.

4. Handrail:

a. Flat Solid Metal handrail of 3/8-inch thick by 4 inches tall. Material to be satin stainless steel finish. Rails to be located on side and back wall of car enclosure.

b. Clearance between support rails and adjacent surfaces shall be 11/2 inches . Top of support rails shall be 32 inches above the floor of the car.

5. Flooring: Flooring per Schedule for Finishes.

6. Threshold: Aluminum

7. Protective pad hooks and quilted fire retardant protective pads: Pad Buttons will be provided with non-suspended ceiling.

8. Provide electrical contact on the car-top exit.

G. Emergency Car Signals

1. Emergency Siren: Siren mounted on top of cab that is activated when the alarm button in the car operating panel is engaged. Siren shall have rated sound pressure level of 80 dB(A) at a distance of three feet from device. Siren shall respond with a delay of not more than one second after activation of alarm button.

2. Emergency Car Lighting: Provide emergency power unit employing a 12-volt sealed rechargeable battery and totally static circuits shall illuminate the elevator car and provide current to the alarm bell in the event of building power failure.

H. Ventilation: Fan.

2.08 EQUIPMENT: SIGNAL DEVICES AND FIXTURES

A. Car Operating Panel: Provide vandal resistant car operating panel with all push buttons, key switches, and message indicators for elevator operation.

1. Flush mounted car operating panel shall contain a bank of round, mechanical, illuminated buttons marked to correspond to landings served, emergency call button, door open button, door close button, and key switches for lights, inspection, and exhaust fan. Buttons have white illumination (halo). All buttons to have raised text and Braille marking on left hand side. The car operating display panel shall be white DOT-matrix. All texts, when illuminated, shall be white. The car operating panel shall have a brushed stainless steel finish.

2. Additional features of car operating panel shall include:

a. Car Position Indicator within operating panel white.

b. Elevator Data Plate marked with elevator capacity and car number on car top.

c. Help buttons with raised markings.

d. In car stop switch per local code.

e. Firefighter's hat.

f. Firefighter's Phase II Key-switch.

g. Call Cancel Button.

h. Emergency Two Way Communication Device

i. Independent Service

j. Firefighter's Phase II emergency in-car operating instructions.

k. Landing Passing Signal

B. Hall Fixtures: Wall mounted vandal resistant hall fixtures shall be provided with necessary push buttons and key switches for elevator operation. Wall mounted hall fixtures shall have a brushed stainless steel finish.

1. Vandal Resistant Hall fixtures shall feature round, mechanical, illuminated buttons in flush fixture housings. Hall fixtures shall correspond to options available from that landing.

C. Emergency Two Way Communication/Video Device: An Emergency Two Way Communication device shall be furnished in the car-operating panel. Necessary wires for the device shall be included and connected to the car traveling cable. (IBC 2018 and ASME A17.1-2019/CSA B44-19).

1. Provide ADA compliant communication device. Communications equipment and connections to the building service system shall be furnished and installed by others. System shall include 24/7 video motoring capable system. Touch screen display with easy-to-read, 2-way messaging.

D. Car Lantern and Chime: A [vandal resistant] directional lantern visible from the corridor shall be provided in the car entrance. When the car stops and the doors are opening, the lantern shall indicate the direction in which the car is to travel and a chime will sound. The chime will sound once for up and twice for down.

E. Hall call cutout key-switches to disable activation of hall buttons, locate at landing

F. Access key-switch at top floor in entrance jamb.

G. Access key-switch at lowest floor in entrance jamb.

H. Landing Passing Signal: A chime bell shall sound in the car to tell a passenger that the car is either stopping at or passing a floor served by the elevator.

I. Open 3 seconds, fully open.

2.09 EQUIPMENT: ELEVATOR OPERATION AND CONTROLLER

A. Elevator Operation: Provide microprocessor-based control system, which utilizes on-board diagnostics for servicing, trouble-shooting, and adjusting without requiring the use of an outside service tool. If an on-board diagnostic system is not provided, a handheld service tool (or laptop), owner's license, operation manual, and tool instructions must be provided in addition to the control system.

1. Simplex Collective Operation: Using a microprocessor-based controller, operation shall be automatic by means of the car and hall buttons. If all calls in the system have been answered, the car shall park at the last landing served.

B. Car Operating Features

1. On/Off Light Switch

2. Car-Stall Protection

3. Firefighters

4. Ascending Car uncontrolled Movement Protection.

5. Top of Car Inspection

6. Load Weight Bypass

7. Intercom, video, and touchscreen provisions.

8. Provision for Card Reader in Car (Future Card Reader)

9. Express Priority Service with key switches at landing

10. Provisions for Elevator Management System

11. Automatic Standby Power Operation with Manual Override.

a. This operation shall return each car automatically to a designated landing when the system is initially switched to standby power. One or more cars are returned at a time. Preference is given to loaded cars over empty cars in order to reduce passenger-waiting times. A car must respond by beginning to move toward the designated landing within a pre-determined time. If a car does not respond, it is automatically placed in a "Not Available" mode while other cars are moved. If a car was not returned to the designated landing on the first try, a second attempt is made. If the second attempt is not successful, the car will remain in a "Not Available" mode and can only be moved by manual means. Once each car has returned to the designated landing, the doors will remain open for a predetermined amount of time.

b. When all cars have successfully returned to the designated landing or have attempted to move twice, automatic selection of the car(s) to run on normal operation will occur.

c. If for any reason a car selected for normal operation under stand by power is delayed for 60 seconds, the car will be placed in a "Not Available" mode and another car will be selected for normal operation based on the priorities listed above.

d. Manual Override of Standby Power Operation is achieved by a manual input for each car via a rotary selector, individual key switch for each car switch. A manually selected car may be run either in a return operation to a designated landing or in normal operation under standby power. If a manually selected car has not yet returned to the designated landing, it will perform this operation first then immediately go into normal operation.

e. If a manually selected car is delayed, no other car can be selected in the group unless it is manually selected.

f. If Manual Override changes car selection while a car is running in return or normal operation under standby power, the newly selected car will not be permitted to run until the car that is running has stopped, opened its doors, and gone into the Standby Power Wait state.)

C. Elevator Control System for Inspections and Emergency

1. Provide devices within controller to run the elevator in inspection operation.

2. Provide devices on car top to run the elevator in inspection operation.

3. Provide within controller an emergency stop switch to disconnect power from the brake and prevents motor from running.

4. Provide the means from the controller to mechanically lift and control the elevator brake to safely bring car to nearest available landing when power is interrupted.

5. Provide the means from the controller to reset the governor over speed switch and also trip the governor.

6. Provide the means from the controller to reset the emergency brake when set because of an unintended car movement or ascending car over speed.

7. Provide the means for the control to reset elevator earthquake operation.

2.10 EQUIPMENT: DOOR OPERATOR AND CONTROL

A. Door Operator: A closed loop permanent magnet PWM high-performance door operator shall be provided to open and close the car and hoist-way doors simultaneously. Door movement shall be cushioned at both limits of travel. Electro-mechanical interlock shall be provided at each hoist-way entrance to prevent operation of the elevator unless all doors are closed and locked. An electric contact shall be provided on the car at each car entrance to prevent the operation of the elevator unless the car door is closed.

B. The door operator shall be arranged so that, in case of interruption or failure of electric power, the doors can be readily opened by hand from within the car, in accordance with applicable code. Emergency devices and keys for opening doors from the landing shall be provided as required by local code.

C. Doors shall open automatically when the car has arrived at or is leveling at the respective landings. Doors shall close after a predetermined time interval or immediately upon pressing of a car button. A door open button shall be provided in the car. Momentary pressing of this button shall reopen the doors and reset the time interval.

D. Door hangers and tracks shall be provided for each car and hoist-way door. Tracks shall be contoured to match the hanger sheaves. The hangers shall be designed for power operation with provisions for vertical and lateral adjustment. Hanger sheaves shall have polyurethane tires and pre-lubricated sealed-for-life bearings.

E. Electronic Door Safety Device. The elevator car shall be equipped with an electronic protective device extending the full height of the car. When activated, this sensor shall prevent the doors from closing or cause them to stop and reopen if they are in the process of closing. The doors shall remain open as long as the flow of traffic continues and shall close shortly after the last person passes through the door opening.

2.11 TWO-STOP AUTOMATIC OPERATION

A. Provide two-stop automatic operation for passenger elevators.

B. Design system so that when the car is standing at either terminal landing, pressing on car button for the other terminal landing shall automatically dispatch car to that landing. Pressing a call button at either landing shall call the car automatically to that landing. If a call is registered while the car is making its trip that call shall remain registered until the car responds to that call. Provide time limit relay arranged to hold car at landing at which it has stopped for predetermined time after car stops. After all car and hall calls have been answered, car shall remain parked at landing where last used with car and hoist-way doors closed, until another call is registered.

C. Pressing the call button at the floor at which car is parked shall automatically open car and hoist-way doors.

D. Car lights and fan in the elevator shall not shut off when elevator is idle. Arrange circuits so that power to lights and outlets on top and bottom of car shall not be interrupted.

2.12 SEISMIC REQUIREMENTS

A. Support and maintain pump unit, controller, rails, rail brackets, conduit, buffers, piping, scavenger pumps and jack unit assembly in place as to effectively prevent any part from sliding, rotating or overturning or jumping under conditions imposed by seismic forces not less than that required to produce an acceleration of gravity horizontally and 1/2 gravity vertically acting simultaneously. Design the total system to continue operation without interruption under specified seismic acceleration,

B. Support all vertical conduits and duct systems within the hoistway at points above the center of gravity of riser. Provide lateral guides at regular intervals.

C. Car guide rail brackets and rail clip bolts shall be guarded against snagging on the side of the rail adjacent to the point of suspension of the traveling cables.

D. Provide car guide rails with at least one intermediate bracket between brackets located at each floor so that bracket spacing does not exceed 2400 mm (8 ft). If intermediate brackets cannot be installed because of lack of structural support, reinforce rails with 225 mm (9 in.) channel or approved equal backing.

E. Guide rails shall not be less than 22.5 kg/m (15 lb/ft).

F. The stresses in parts of structural members made of steel shall not exceed 88 percent of the minimum elastic strength of the material used in the fastenings.

G. Provide car enclosure ceiling panels and fluorescent tubes with latching devices that shall restrain the panels and LEDs. Devices shall be readily removable for cleaning or replacing panels and re-lamping.

H. Submittals are required for all equipment anchors, supports, restraints and detectors. Submittals shall include weight, dimensions, center of gravity, standard connections, calculations, manufacturer's recommendations, behavior problems (vibration, thermal, expansion, etc.,) so that design can be properly reviewed.

I. Provide an Earthquake Detection device in machine room to activate “GO SLOW ELEVATORS” operation. The following are references:

1. Emergency Service:

a. Earthquake emergency operation Section 304(d)

b. Title 8, Industrial Relations, Division 01

c. Department of Industrial Relations, Chapter 4

d. Division of Industrial Safety, Sub Chapter 6, Elevator Safety Order

2.13 WORKMAN'S LIGHTS AND OUTLETS

A. Provide duplex GFCI protected type receptacles and lamp, with guards on top of elevator car and beneath platform.

B. The receptacles shall be in accordance with Fed. Spec. W-C-596 for Type D7, 2-pole, 3-wire grounded type rated for 15 amperes and 125 volts.

2.14 CAR LEVELING DEVICE

A. Car shall be equipped with a two-way leveling device to automatically bring the car to within 3 mm (1/8 in.) of exact level with the landing for which a stop is initiated regardless of load in car or direction.

B. If the car stops short or travels beyond the floor, the leveling device, within its zone shall automatically correct this condition and maintain the car within 3 mm (1/8 in.) of level with the floor landing regardless of the load carried.

C. Provide encoded steel tape, steel tape with magnets or steel vanes with magnetic switches. Submit design for approval.

2.15 EMERGENCY STOP SWITCHES

A. Provide an emergency stop switch for each top-of-car device, pit, machine spaces, service panel and firefighters' control panel inside the elevator. Mount stop switches in the pit adjacent to pit access door, at top of the pit ladder 1220 mm (48 in.) above the bottom landing sill and 1220 mm (48 in.) above the pit floor adjacent to the pit ladder.

B. Each stop switch shall be red in color and shall have "STOP" and "RUN" positions legibly and indelibly identified.

2.16 MAIN CAR OPERATING PANEL

A. Locate the main car operating panel in the car enclosure on the front return panel for passenger/service elevators and the front of the side wall for freight elevators. The top floor car call push button shall not be more than 1220 mm (48 in.) above the finished floor. Car call push buttons and indicator lights shall be round with a minimum diameter of 25 mm (1 in.), LED white light illuminated.

B. One piece front faceplate, with edges beveled 15 degrees, shall have the firefighters' service panel recessed into the upper section and the service operation panel recessed into the lower section, fitted with hinged doors. Doors shall have concealed hinges, be in the same front plane as the faceplate and fitted with cylinder type key operated locks. Secure the faceplate with stainless steel tamperproof screws.

C. All terminology on the main car operating panel shall be raised or engraved. Use 6 mm (1/4 in.) letters to identify all devices in upper section of the main car operating panel. The handicapped markings with contrasting background shall be recessed .030 inch in the faceplate, square or rectangular in shape, with the finished face of the 12 mm (1/2 in.) numerals and markings flush with the faceplates. Surface mounted plates are not acceptable.

D. The upper section shall contain the following items in order listed from top to bottom:

1. Engrave elevator number, 25 mm (1 in.) high with black paint for contrast.

2. Engrave capacity plate information with black paint for contrast with freight loading class and number of passengers allowed.

3. Emergency car lighting system consisting of a rechargeable battery, charger, controls, and LED illuminated light fixture. The system shall automatically provide emergency light in the car upon failure or interruption of the normal car lighting service, and function irrespective of the position of the light control switch in the car. The system shall be capable of maintaining a minimum illumination of 1.0 foot-candle when measured 1220 mm (48 in.)above the car floor and approximately 305 mm (12 in.) in front of the car operating panel, for not less than four (4) hours.

4. LED illuminated digital car position indicator with direction arrows. Digital display floor numbers and direction arrows shall be a minimum of 50mm (2 in.) high.

5. Firefighters' Emergency Operation Panel shall conform to the requirements of ASME A17.1 Section 2.27. Firefighters' Panel shall be 1676 mm (66 in.) minimum to 1830 mm (72 in.) maximum to the top of the panel above finished floor.

6. Firefighters' Emergency Indicator Light shall be round with a minimum diameter of 25 mm (1 in.).

7. Independent Service switch, see Section 2.30 for detailed description.

8. Provide a Door Hold button on the faceplate next to the independent service key switch. It shall have "DOOR HOLD" indelibly marked on the button. Button shall light when activated. When activated, the door shall stay open for a maximum of one minute. To override door hold timer, push a car call button or door close button. Door Hold button is not ADA required and Braille is not needed.

9. Complete set of round car call push buttons, minimum diameter of 25 mm (1 in.), and LED white light illuminated, corresponding to the floors served. Car call buttons shall be legibly and indelibly identified by a floor number and/or letter not less than 12mm (1/2 in.) high in the face of the call button. Stack buttons in a single vertical column for low rise buildings up to six floors with front openings only.

10. Door Open and Door Close buttons shall be located below the car call buttons. They shall have "OPEN" and "CLOSE" legibly and indelibly identified by letters in the face of the respective button. The Door Open button shall be located closest to the door jamb as required by ADA.

11. Red Emergency Alarm button that shall be located below the car operating buttons. Mount the emergency alarm button not lower than 890 mm (35 in.) above the finished floor. It shall be connected to audible signaling devices as required by A17.1 Rule 2.27.1.2. Provide audible signaling devices including the necessary wiring.

12. Emergency Help push button shall activate two way communications by Auto Dial telephone system as required by ASME A17.1 Rule 2.27.1.1.3. Help button shall be LED white light illuminated and flash when call is acknowledged. Legibly and indelibly label the button "HELP" in the face of the button with 12 mm (1/2 in.) high letters.

13. Provide a corresponding Braille plate on the left side of each button. The handicapped markings with contrasting background shall be recessed .030 inch in the faceplate, square or rectangular in shape, with the finished face of the 12 mm (1/2 in.) numerals and markings flush with the faceplates. Surface mounted plates are not acceptable.

E. The service operation panel, in the lower section shall contain the following items:

1. Light switch labeled “LIGHTS” for controlling interior car lighting with its two positions marked “ON” and “OFF”.

2. Inspection switch that will disconnect normal operation and activate hoistway access switches at terminal landings. Switch shall be labeled “INSPECTION” with its two positions marked “ON” and “OFF”.

3. Three position switch labeled “FAN” with its positions marked “HIGH”, “LOW” and “OFF” for controlling car ventilating blower.

4. Two position, spring return, toggle switch or push button to test the emergency light and alarm device. It shall be labeled “TEST EMERGENCY LIGHT AND ALARM”.

2.17 AUTO DIAL TELEPHONE SYSTEM

A. Furnish and install a complete ADA compliant intercommunication system.

B. Provide a two-way communication device in the car with automatic dialing, tracking and recall features with shielded wiring to car controller in machine room. Provide dialer with automatic rollover capability with minimum two numbers.

C. “HELP” button shall illuminate and flash when call is acknowledged. Button shall match floor push button design.

D. Provide “HELP” button tactile symbol engraved signage and Braille adjacent to button mounted integral with car operating panels.

E. The auto dial system shall be located in the auxiliary car operating panel. The speaker and unit shall be mounted on the backside of the perforated stainless steel plate cover.

F. Each elevator shall have an individual phone number.

G. If the operator ends the call, the phone shall be able to redial immediately.

2.18 CORRIDOR OPERATING DEVICE FACEPLATES

A. Fabricate faceplates for elevator operating and signal devices from not less than 3 mm (1/8 in.) thick flat stainless steel with all edges beveled 15 degrees. Install all faceplates flush with surface on which they are mounted.

B. Corridor push button faceplates shall be at least 127 mm (5 in.) wide by 305 mm (12 in.) high. The centerline of the landing push buttons shall be 1067 mm (42 in.) above the corridor floor.

C. Elevator Corridor Call Station Pictograph shall be engraved in the faceplate.

D. Fasten all car and corridor operating device and signal device faceplates with stainless steel tamperproof screws.

E. Design corridor push button faceplates so that pressure on push buttons shall be independent of pressure on push button contacts.

F. Engraved legends in faceplates shall have lettering 6 mm (1/4 in.) high filled with black paint.

G. Provide a corresponding Braille plate on the left side of each button. The handicapped markings with contrasting background shall be recessed .030 inch in the faceplate, square or rectangular in shape, with the finished face of the 12 mm (1/2 in.) numerals and markings flush with the faceplates. Surface mounted plates are not acceptable.

PART 3 EXECUTION

3.01 EXAMINATION

A. Field measure and examine substrates, supports, and other conditions under which elevator work is to be performed.

B. Do not proceed with work until unsatisfactory conditions are corrected.

C. Prior to start of Work, verify hoist-way is in accordance with shop drawings. Dimensional tolerance of hoist-way from shop drawings: -0 inches +2 inches. Do not begin work of this section until dimensions are within tolerances.

D. Prior to start of Work, verify projections greater then 2 inches (4 inches if ASME A17.1/CSA B44 2000 applies) must be beveled not less then 75 degrees from horizontal.

E. Prior to start of Work, verify landings have been prepared for entrance sill installation. Traditional sill angle or concrete sill support shall not be required.

F. Prior to start of Work, verify elevator pit has been constructed in accordance with requirements, is dry and reinforced to sustain vertical forces, as indicated in approved submittal. Verify that sumps or sump pumps located within pit will not interfere with installed elevator equipment.

G. Prior to start of Work, verify control space has been constructed in accordance with requirements, with access coordinated with elevator shop drawings, including Sleeves and penetrations.

H. Verify installation of GFCI protected 15-amp in pit and adjacent to each signal control cabinet in control space.

I. Before fabrication, take necessary job site measurements, and verify where work is governed by other trades. Check measurement of space for equipment, and means of access for installation and operation. Obtain dimensions from site for preparation of shop drawings.

J. Ensure the following preparatory work, provided under other sections of the specification has been provided. If the Elevator Contractor requires changes in size or location of trolley beams, or their supports, trap doors, etc., to accomplish their work, he must make arrangements, subject to approval of the Owner and include cost in their bid. Where applicable, locate controller near and visible to its respective hydraulic pump unit. Work required prior to the completion of the elevator installation:

1. Supply of electric feeder wires to the terminals of the elevator control panel, including circuit breaker.

2. Provide light and GFCI outlets in the elevator pit and machine room.

3. Furnish electric power for testing and adjusting elevator equipment.

4. Furnish circuit breaker panel in machine room for car and hoistway lights and receptacles.

5. Supply power for cab lighting and ventilation from an emergency power panel specified in Division 26, ELECTRICAL.

6. Machine room enclosed and protected from moisture, with self-closing, self-locking door and access stairs.

7. Provide fire extinguisher in machine room.

K. Supply for installation, inserts, anchors, bearing plates, brackets, supports and bracing including all setting templates and diagrams for placement.

L. Operating Devices

1 Provide one riser of landing call buttons located as shown on contract drawings.

2. Fixtures for intermediate landings shall contain "UP" and "DOWN" buttons. Fixtures for terminal landings shall contain a single "UP" or "DOWN" button.

3. Each button shall contain an integral registration LED white light which shall illuminate upon registration of a call and shall extinguish when that call is answered.

4. The direction of each button shall be legibly and indelibly identified by arrows not less than 12 mm (1/2 in.) high in the face of each button.

5. Two or more risers of landing call buttons, if specified, shall be cross-connected so that either "UP" or "DOWN" buttons at a floor shall be capable of registering a call to that floor for the entire elevator group. Registration of a landing call shall illuminate "UP" or "DOWN" buttons simultaneously, and upon satisfaction of that call, both buttons shall be extinguished simultaneously.

6. Landing push buttons shall not re-open the doors while the car and hoistway doors are closing at that floor, the call shall be registered for the next available elevator. Calls registered shall be canceled if closing doors are re-opened by means of "DOOR OPEN" button or infrared curtain unit.

M. Lantern/Position Indicator

1. Provide each car with combination corridor lantern/position indicator digital display mounted over the hoistway entrances at each and every floor. Provide each terminal landing with "UP" or "DOWN", minimum 64 mm (2 1/2 in.) high digital arrow lanterns and each intermediate landing with "UP" and "DOWN" digital arrow lanterns. Each lens shall be LED illuminated of proper intensity, so shielded to illuminate individual lens only. The lenses in each lantern shall be illuminated green to indicate "UP" travel and red to indicate "DOWN" travel. Lanterns shall signal in advance of car arrival at the landing indicating the direction of travel whether or not corridor button has been operated at that floor. Hall calls shall receive immediate assignment to individual cars and hall lantern shall sound and illuminate. Corridor lanterns shall not be illuminated when a car passes a floor without stopping. Each

lantern shall be equipped with a clearly audible electronic chime which shall sound once for "UPWARD" bound car and twice for "DOWNWARD" bound car. Audible signal shall not sound when a car passes the floor without stopping. Provide adjustable sound level on audible signal. Car riding lanterns are not acceptable.

2. Provide alpha-numeric digital position indicators directly over hoistway landing entranceways between the arrival lanterns at each and every floor. Indicator faceplate shall be stainless steel. Numerals shall be not less than 50 mm (2 in.) high with direction arrows. Cover plates shall be readily removable for re-lamping. The appropriate direction arrow shall be illuminated during entire travel of car in corresponding direction.

3. Provide LED illumination in each compartment to indicate the position and direction the car is traveling by illuminating the proper alpha-numeric symbol. When the car is standing at a landing without direction established, arrows shall not be illuminated.

3.02 PREPARATION

A. Coordinate installation of anchors, bearing plates, brackets and other related accessories.

3.03 INSTALLATION

A. Perform work with competent Certified Elevator Mechanics and Apprentices skilled in this work and under the direct supervision of the Elevator Contractor’s experienced foreman.

B. Set hoistway entrances in alignment with car openings, and true with plumb sill lines.

C. Erect hoistway sills, headers and frames prior to erection of rough walls and doors. Erect fascias and toe guards after rough walls are finished.

D. Install machinery, guides, controls, car and all equipment and accessories in accordance with manufacturer's instructions, applicable codes and standards.

E. Isolate and dampen machine vibration with properly sized sound-reducing anti-vibration pads.

F. Grout sills and hoistway entrance frames.

3.04 CONSTRUCTION

A. Interface with Other Work:

1. Guide rail brackets attached to steel shall be installed prior to application of fireproofing.

2. Coordinate construction of entrance walls with installation of door frames and sills. Maintain front wall opening until elevator equipment has been installed.

a. Ensure adequate support for entrance attachment points at all landings.

b. Coordinate wall openings for hall push buttons, signal fixtures and sleeves. Each elevator requires sleeves within the hoistway wall.

c. Coordinate emergency power transfer switch and power change pending signals as required for termination at the primary elevator signal control cabinet in each group.

d. Coordinate interface of elevators and fire alarm system.

e. Coordinate interface of dedicated telephone line.

f. Coordination installation of pit ladder.

g. Coordination installation of Shut Trip by electrical contractor.

3.05 WORKMANSHIP AND PROTECTION

A. Installations shall be performed by Certified Elevator Mechanics and Apprentices to best possible industry standards. Details of the installation shall be mechanically and electrically correct. Materials and equipment shall be new and without imperfections.

B. Recesses, cutouts, slots, holes, patching, grouting, refinishing to accommodate installation of equipment shall be included in the Contractor's work. All new holes in concrete shall be core drilled.

C. Structural members shall not be cut or altered. Work in place that is damaged or defaced shall be restored equal to original condition.

D. Finished work shall be straight, plumb, level, and square with smooth surfaces and lines. All machinery and equipment shall be protected against dirt, water, or mechanical injury. At final completion, all work shall be thoroughly cleaned and delivered in perfect unblemished condition.

E. Sleeves for conduit and other small holes shall project 50 mm (2 in.) above concrete slabs.

F. Exposed gears, sprockets, and sheaves shall be guarded from accidental contact in accordance with ASME A17.1 Section 2.10.

3.06 TESTING AND INSPECTIONS

A. Perform recommended and required testing in accordance with authority having jurisdiction. Perform adjustments and modifications required by the authority having justification without and additional Cost to Owner weather or not specified or defined by the construction documents. This project (elevator, hoist way and elevator lobbies) shall be bid and constructed to meet all Federal, State and Local laws and regulatory requirements and technical requirements for this type of elevator regardless of items specified or defined in the drawings, including all electrical, mechanical, plumbing, fire protection and special systems. This shall include supports for elevator, guide rails, hoist beams, machine supports and elevator shaft construction.

B. Pre-test the elevators and related equipment in the presence of the Owner or his authorized representative for proper operation before requesting final inspection. Conduct final inspection at other than normal working hours, if required by Owner.

1. Procedure outlined in the Inspectors Manual for Hydraulic Elevators, ASME A17.2 shall apply.

a. Final test shall be conducted in the presence of and witnessed by an ASME QEI-1 Certified Elevator Inspector.

2. Contractor shall furnish the following test instruments and materials on-site and at the designated time of inspection: properly marked test weights, oil pressure gauge, voltmeter, amp probe, thermometers, direct reading tachometer, megohm meter, vibration meter, sound meter, light meter, stop watch, and a means of two-way communication.

3. If during the inspection process the Inspector determines the need, the following instruments shall be available within a four-hour period: Megohm meter, vibration meter, sound meter, and a light meter.

C. Inspection of workmanship, equipment furnished, and installation for compliance with specification.

D. Full-Load Run Test: Elevators shall be tested for a period of one hour continuous run with full contract load in the car. The test run shall consist of the elevator stopping at all floors, in either direction of travel, for not less than five or more than ten seconds per floor.

E. Speed Test: The actual speed of the elevator shall be determined in both directions of travel with full contract load and no load in the elevator. Speed shall be determined by certified tachometer. The actual measured speed of the elevator with all loads in either direction shall be within five (5) percent of specified rated speed. Full speed runs shall be quiet and free from vibration and sway.

F. Temperature Rise Test: The temperature rise of the pump motor shall be determined during the full load test run. temperatures shall be measured by the use of thermometers. Under these conditions, the temperature rise of the equipment shall not exceed 50 degrees Centigrade above ambient temperature. Test shall start when all machine room equipment is within 5 degrees Centigrade of the ambient temperature. Other tests for heat runs on motors shall be performed as prescribed by the Institute of Electrical and Electronic Engineers.

G. Car Leveling Test: Elevator car leveling devices shall be tested for accuracy of leveling at all floors with no load in car and with contract load in car in both directions of travel. Accuracy of floor level shall be within plus or minus 3 mm (1/8 in.) of level with any landing floor for which the stop has been initiated regardless of load in car or direction of travel. The car leveling device shall automatically correct over travel as well as under travel and shall maintain the car floor within plus or minus 3 mm (1/8 in.) of level with the landing floor regardless of change in load.

H. Insulation Resistance Test: The elevator's complete wiring system shall be free from short circuits and ground faults and the insulation resistance of the system shall be determined by use of megohm meter, at the discretion of the Elevator Inspector conducting the test.

I. Safety Devices Tests: Safety devices shall be tested as required by ASME A17.1 Section 8.10.

J. Overload Devices: Test all overload current protection devices in the system at final inspection.

K. Limit Stops:

1. The position of the car when stopped by each of the normal limit stops with no load and with contract load in the car shall be accurately measured.

2. Final position of the elevator relative to the terminal landings shall be determined when the elevator has been stopped by the final limits. The lower limit stop shall be made with contract load in the elevator. Elevator shall be

operated at inspection speed for both tests. Normal limit stopping devices shall be inoperative for the tests.

L. Setting of Car Door Contacts: The position of the car door at which the elevator may be started shall be measured. The distance from full closure shall not exceed that required by ASME A17.1. The test shall be made with the hoistway doors closed or the hoistway door contact inoperative.

M. Setting of Interlocks: The position of the hoistway door at which the elevator may be started shall be measured and shall not exceed ASME A17.1 requirements.

N. Operating and Signal System: The elevator shall be operated by the operating devices provided and the operation signals and automatic floor leveling shall function in accordance with requirements specified. Starting, stopping and leveling shall be smooth and comfortable without appreciable steps of acceleration or deceleration.

O. Performance of the Elevator supervisory system shall be witnessed and approved by the representative of the Owner.

P. Evidence of malfunction in any tested system or parts of equipment that occurs during the testing shall be corrected, repaired, or replaced at no additional cost to the Owner, and the test repeated.

Q. If equipment fails test requirements and a re-inspection is required, the Contractor shall be responsible for the cost of re-inspection; salaries, transportation expenses, and per-diem expenses incurred by the representative of the Owner.

3.07 DEMONSTRATION

A. Prior to substantial completion, instruct Owner’s Representative on the proper function and required daily maintenance of elevators. Instruct personnel on emergency procedures.

3.08 INSTRUCTION OF PERSONNEL

A. Provide competent instruction to the Owner regarding the operation of equipment and accessories installed under this contract, for a period equal to one eight hour work day. Instruction shall commence after completion of all work and at the time and place directed by the Owner.

B. Written instructions in triplicate relative to care, adjustments and operation of all equipment and accessories shall be furnished and delivered to the Owner in independently bound folders. DVD recordings will also be acceptable. Written instructions shall include correct and legible wiring diagrams, nomenclature sheet of all electrical apparatus including location of each device, complete and comprehensive sequence of operation, complete replacement parts list with descriptive literature, and identification and diagrammatic cuts of equipment and parts. Information shall also include electrical operation characteristics of all circuits, relays, timers, and electronic devices, as well as R.P.M. values and related characteristics for all rotating equipment.

C. Provide supplementary instruction for any new equipment that may become necessary because of changes, modifications or replacement of equipment or operation under requirements of paragraph entitled "Warranty of Construction".

END OF SECTION

PART 1 GENERAL

1.01 DESCRIPTION

A. Definitions:

1. Exposed: Piping and equipment exposed to view in finished rooms.

2. Option or optional: Contractor's choice of an alternate material or method.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 QUALITY ASSURANCE

A. Products Criteria:

1. Standard Products: Material and equipment shall be the standard products of a manufacturer regularly engaged in the manufacture of the products for at least 3 years. See other specification sections for any exceptions.

2. Equipment Service: Products shall be supported by a service organization which maintains a complete inventory of repair parts and is located reasonably close to the site.

3. Multiple Units: When two or more units of materials or equipment of the same type or class are required, these units shall be products of one manufacturer.

4. Assembled Units: Manufacturers of equipment assemblies, which use components made by others, assume complete responsibility for the final assembled product.

5. Nameplates: Nameplate bearing manufacturer's name or identifiable trademark shall be securely affixed in a conspicuous place on equipment, or name or trademark cast integrally with equipment, stamped or otherwise permanently marked on each item of equipment.

6. Asbestos products or equipment or materials containing asbestos shall not be used.

B. Manufacturer's Recommendations: Where installation procedures or any part thereof are required to be in accordance with the recommendations of the manufacturer of the material being installed, printed copies of these recommendations shall be furnished to the Owner prior to installation. Installation of the item will not be allowed to proceed until

the recommendations are received. Failure to furnish these recommendations can be cause for rejection of the material.

C. Guaranty: Warranty of Construction, according to Division 01 requirements.

D. Supports for sprinkler piping shall be in conformance with NFPA 13 and section 13 05 41.

1.04 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Manufacturer's Literature and Data:

1. Equipment and materials identification.

2. Fire-stopping materials.

3. Hangers, inserts, supports and bracing. Provide load calculations for variable spring and constant support hangers.

4. Wall, floor, and ceiling plates.

C. Coordination Drawings: Provide detailed layout drawings of all piping systems. Provide details of the following.

1. Sprinkler head layout.

2. Hangers, inserts, supports, and bracing.

3. Pipe sleeves.

4. Penetrations of floors, walls, or ceilings.

D. Maintenance Data and Operating Instructions:

1. Maintenance and operating manuals in accordance with Division 01, OPERATING AND MAINTENANCE MANUALS, for systems and equipment.

2. Provide a listing of recommended replacement parts for keeping in stock supply, including sources of supply, for equipment.

1.05 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. American Society for Testing and Materials (ASTM):

A36/A36M-2001 .....Carbon Structural Steel

A53/A53M .....Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless

A575-96.....Steel Bars, Carbon, Merchant Quality, M-Grades R (2002)

E84-2003 ..... Standard Test Method for Burning Characteristics of Building Materials

E119-2000 ..... Standard Test Method for Fire Tests of Building Construction and Materials

C. National Fire Protection Association (NFPA):

13-2013 ..... Installation of Sprinkler Systems

25-2014 ..... Inspection, Testing and Maintenance of Water-Based Fire Protection Systems

101-2015 ..... Life Safety Code

PART 2 PRODUCTS

2.01 EQUIPMENT AND MATERIALS IDENTIFICATION

A. Valve Tags and Lists:

1. Valve tags: Engraved black filled numbers and letters not less than 13 mm (1/2-inch) high for number designation, and not less than 6.4 mm (1/4-inch) for service designation on 19 gage 38 mm (1-1/2 inches) round brass disc, attached with brass "S" hook or brass chain.

2. Valve lists: Typed or printed plastic-coated card(s), sized 216 mm (8-1/2 inches) by 280 mm (11 inches) showing tag number, valve function and area of control, for each service or system. Punch sheets for a 3-ring notebook.

3. Provide detailed plan for each floor of the building indicating the location and valve number for each valve. Identify location of each valve with a color-coded thumb tack in ceiling.

2.02 FIRESTOPPING

A. Section 07 84 00, FIRESTOPPING specifies an effective barrier against the spread of fire, smoke and gases where penetrations occur for piping.

2.03 GALVANIZED REPAIR COMPOUND

A. Mil. Spec. DOD-P-21035B, paint form.

2.04 PIPE PENETRATIONS

A. Install sleeves during construction for other than blocked out floor openings for risers in mechanical bays.

B. To prevent accidental liquid spills from passing to a lower level, provide the following:

1. For sleeves: Extend sleeve 25 mm (one inch) above finished floor and provide sealant for watertight joint.

2. For blocked out floor openings: Provide 40 mm (1-1/2 inch) angle set in silicone adhesive around opening.

3. For drilled penetrations: Provide 40 mm (1-1/2 inch) angle ring or square set in silicone adhesive around penetration.

C. Penetrations are not allowed through beams or ribs or beam flanges. Any deviation from this requirement must receive prior approval of Structural Engineer.

D. Sheet Metal, Plastic, or Moisture-resistant Fiber Sleeves: Provide for pipe passing through floors, interior walls, and partitions, unless brass or steel pipe sleeves are specifically called for below.

E. Sleeves are not required for wall hydrants for fire department connections or in drywall construction.

F. Sleeve Clearance: Sleeve through floors, walls, partitions, and beam flanges shall be one inch greater in diameter than external diameter of pipe. Sleeve for pipe with insulation shall be large enough to accommodate the insulation. Interior openings shall be caulked tight with fire stopping material and sealant to prevent the spread of fire, smoke, and gases.

G. Sealant and Adhesives: Shall be as specified in Section 07 90 00, JOINT SEALER.

2.05 WALL, FLOOR AND CEILING PLATES

A. Material and Type: Chrome plated brass or chrome plated steel, one piece or split type with concealed hinge, with set screw for fastening to pipe, or sleeve. Use plates that fit tight around pipes, cover openings around pipes and cover the entire pipe sleeve projection.

B. Thickness: Not less than 2.4 mm (3/32-inch) for floor plates. For wall and ceiling plates, not less than 0.64 mm (0.025-inch) for up to 80 mm (3-inch pipe), 0.89 mm (0.035-inch) for larger pipe.

C. Locations: Use where pipe penetrates floors, walls and ceilings in exposed locations, in finished areas only. Provide a watertight joint in spaces where brass or steel pipe sleeves are specified.

PART 3 EXECUTION

3.01 INSTALLATION

A. Coordinate location of piping, sleeves, inserts, hangers, and equipment. Locate piping, sleeves, inserts, hangers, and equipment clear of windows, doors, openings, light outlets, and other services and utilities. Follow manufacturer's published recommendations for installation methods not otherwise specified.

B. Protection and Cleaning:

1. Equipment and materials shall be carefully handled, properly stored, and adequately protected to prevent damage before and during installation, in accordance with the manufacturer's recommendations and as approved by the

Owner. Damaged or defective items in the opinion of the Owner, shall be replaced.

C. Concrete and Grout: Use concrete and shrink compensating grout 25 MPa (5000 psi) minimum, specified in Section 03 30 00, CAST-IN-PLACE CONCRETE.

D. Install gages, valves, and other devices with due regard for ease in reading or operating and maintaining said devices. Locate and position gages to be easily read by operator or staff standing on floor or walkway provided. Servicing shall not require dismantling adjacent equipment or pipe work.

E. Switchgear Drip Protection: Every effort shall be made to eliminate the installation of pipe above electrical and telephone switchgear. If this is not possible, encase pipe in a second pipe with a minimum of joints.

F. Inaccessible Equipment:

1. Where the Owner determines that the Contractor has installed equipment not conveniently accessible for operation and maintenance, equipment shall be removed and reinstalled or remedial action performed as directed at no additional cost to the Owner.

2. The term "conveniently accessible" is defined as capable of being reached without the use of ladders, or without climbing or crawling under or over obstacles such as motors, fans, pumps, belt guards, transformers, high voltage lines, piping, and ductwork.

3.02 OPERATING AND PERFORMANCE TESTS

A. Prior to the final inspection, perform required tests as specified in section 01 00 00 General Requirement and submit the test reports and records to the Owner’s Representative.

B. Should evidence of malfunction in any tested system, or piece of equipment or component part thereof, occur during or as a result of tests, make proper corrections, repairs or replacements, and repeat tests at no additional cost to the Owner.

3.03 INSTRUCTIONS TO COUNTY PERSONNEL

A. Provide in accordance with section 01 00 00 General Requirement.

END OF SECTION

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PART 1 GENERAL

1.01 SCOPE OF WORK

A. Provide all supervision, engineering, design, labor, materials and equipment necessary to install a complete wet-pipe sprinkler system.

B. Design, installation and testing shall be in accordance with NFPA 13 except for specified exceptions.

C. The design and installation of a hydraulically calculated automatic wet system complete and ready for operation, for all portions of building.

D. Design, installation and testing shall be in accordance with utility, city and county connection requirements, including backflow, lateral, thrust blocks, valves, sensors, alarms and ports for complete, compliant for protecting system.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 QUALITY ASSURANCE

A. Installer Reliability: The installer shall possess a valid State of California C-16 fire sprinkler contractor's license. The installer shall have been actively and successfully engaged in the installation of commercial automatic sprinkler systems for the past ten years.

B. Materials and Equipment: All equipment and devices shall be of a make and type listed by UL and approved by FM, or other nationally recognized testing laboratory for the specific purpose for which it is used. All materials, devices, and equipment shall be approved by the County.

C. Submittals: Submit as one package in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES. Prepare detailed working drawings that are signed and stamped by a Registered Professional Engineer. As Owner review is for technical adequacy only, the installer remains responsible for correcting any conflicts with other trades and building construction that arise during installation. Partial submittals will not be accepted. Material submittals shall be approved prior to the purchase or delivery to the job site. Suitably bind submittals in notebooks or binders and provide index referencing the appropriate specification section. Submittals shall include, but not be limited to, the following:

1. Qualifications:

a. Provide a copy of the installing contractor's fire sprinkler and state contractor's license.

2. Drawings: Submit detailed 1:100 (1/8 inch) scale (minimum) working drawings conforming to NFPA 13. Include a site plan showing the piping to the water supply test location.

3. Manufacturers Data Sheets:

a. Provide for materials and equipment proposed for use on the system. Include listing information and installation instructions in data sheets. Where data sheet describes items in addition to that item being submitted, clearly identify proposed item on the sheet.

4. Calculation Sheets: Submit hydraulic calculation sheets in tabular form conforming to the requirements and recommendations of NFPA 13.

5. Valve Charts: Provide a valve chart that identifies the location of each control valve. Coordinate identification of control valve with the Owner. The chart shall include no less than the following: Tag ID No., valve size, service (control valve, main drain, aux. drain, inspections test valve, etc.), and location.

6. Final Document Submittals: Provide as-built drawings, testing and maintenance instructions in accordance with the requirements in Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES. Submittals shall include, but not be limited to, the following:

a. One complete set of reproducible as-built drawings showing the installed system with the specific interconnections between the waterflow switch or pressure switch and the fire alarm equipment.

b. Complete, simple, understandable, step-by-step, testing instructions giving recommended and required testing frequency of all equipment, methods for testing all equipment, and a complete trouble shooting manual. Provide maintenance instructions on replacing any components of the system including internal parts, periodic cleaning and adjustment of the equipment and components with information as to the address and telephone number of both the manufacturer and the local supplier of each item.

c. Material and Testing Certificate: Upon completion of the sprinkler system installation or any partial section of the system, including testing and flushing, provide a copy of a completed Material and Testing Certificate as indicated in NFPA 13.

d. Instruction Manual: Provide one copy of the instruction manual covering the system in a flexible protective cover and mount in an accessible location adjacent to the riser.

D. Design Basis Information: Provide design, materials, equipment, installation, inspection, and testing of the automatic sprinkler system in accordance with the requirements of NFPA 13. Recommendations in appendices shall be treated as requirements.

1. Perform hydraulic calculations in accordance with NFPA 13 utilizing the Area/Density method. Do not restrict design area reductions permitted for using

quick response sprinklers throughout by the required use of standard response sprinklers in the areas identified in this section.

2. Sprinkler Protection: The hazard classification examples of uses and conditions identified in the Annex. of NFPA 13 shall be mandatory. To determining spacing and sizing, apply the following coverage classifications:

   a. Ordinary Hazard Group 1 Occupancies: Laboratories, Mechanical Equipment Rooms, Transformer Rooms, Electrical Switchgear Rooms, Electric Closets.

   b. Request clarification from the Owner for any hazard classification not identified.

3. Hydraulic Calculations: Calculated demand including hose stream requirements shall fall no less than 10 percent below the available water supply curve.

4. Water Supply: Base water supply on a flow test made by the contractor. Report submitted to the Owner is to include:

   a. Location: Nearest intersection & Address

   b. Elevation Static Test Gauge: ___ ft.

   c. Elevation Residual Test Gauge: ___ ft.

   d. Static pressure: _ psi.

   e. Residual pressure: _ psi.

   f. Flow: _ gpm.

   g. Date: ____.

   h. Time: ____.

5. Contractor shall confirm allowable water flow and pressure by performing their own water flow test in the presence of authorities having jurisdiction prior to any design work.

6. Zoning:

   a. For each sprinkler zone provide a control valve, flow switch and a test and drain assembly with pressure gauge.

   b. Provide seismic protection in accordance with NFPA 13 and Section 13 05 41.

1.04 APPLICABLE PUIBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. Codes and Standards: Provide a wet-pipe sprinkler system conforming to latest editions of Codes and Standards.

C. National Fire Protection Association (NFPA), including all amendments and appendices:

13 .....Installation of Sprinkler Systems

101 .....Safety to Life from Fire in Buildings and Structures (Life Safety Code)

101 .....Life Safety Code

170 .....Fire Safety Symbols

D. Underwriters Laboratories, Inc. (UL):

UL-FPED (Fire Protection Equipment Directory)

E. Factory Mutual Engineering Corporation (FM):

Approval Guide

F. California Building Code

G. California Fire Code

PART 2 PRODUCTS

2.01 PIPING & FITTINGS

A. Sprinkler systems in accordance with NFPA 13.

2.02 VALVES

A. Valves in accordance with NFPA 13.

B. Do not use quarter turn ball valves for 50 mm (2 inch) or larger drain valves.

C. The wet system control valve shall be a listed indicating type valve. Control valve shall be UL Listed and FM Approved for fire protection installations. System control valve shall be rated for normal system pressure but in no case less than 175 PSI. (No Substitutions Allowed).

2.03 FIRE DEPARTMENT SIAMESE CONNECTION

A. Use new brass flush wall type, exterior fire department connection with a minimum of two 65 mm (2-1/2 inch) connections threaded to match those on the local fire protection service, with polished brass caps and chains. Provide escutcheon with integral raised letters "Automatic Sprinkler" "Standpipe and Automatic Sprinkler". Install an automatic ball drip between fire department connection and check valve with drain piping routed to the exterior of the building.

2.04 SPRINKLERS

A. All sprinklers shall be FM approved. Provide quick response recessed type fire sprinklers in all areas, except where specifically prohibited by their listing or approval.

1. In generator electrical and telecom rooms: Standard response sprinklers.

2. Provide ‘cages’ to protect sprinkler heads from breakage/damage when the elevation of the head is less than 7 feet 6 inches above finished floor (mechanical rooms, janitor closets, etc).

3. Sprinkler heads shall be installed in center of tile or center to center.

B. Temperature Ratings: In accordance with NFPA 13:

1. Sprinklers in electrical rooms, telecom rooms, and “doghouses”: High temperature rated.

2.05 SPRINKLER CABINET

A. Provide sprinkler cabinet with the required number of sprinkler heads of all ratings and types installed, and a sprinkler wrench for each system. Locate adjacent to the riser.

2.06 FLEXIBLE SPRINKLER HOSE

A. U.L. 2443 and FM 1637 approved type 304 stainless steel, 2’-0” to 6’-0” lengths, 1/2" or 3/4" outlets, 175 psi maximum rated pressure, fully welded non-mechanical fittings, braided, leak tested with minimum 1 inch true bore internal corrugated hose diameter. Provide elbow hose assembly as required.

B. Ceiling. Brackets: Galvanized steel, multi-port style, self-securing integrated snap-on clip ends with tamper resistant screws, and removable hub type with set screw flexible hose attachment.

2.07 IDENTIFICATION SIGNS/HYDRAULIC PLACARDS

A. Steel or aluminum signs with white lettering on a red background with holes for easy attachment. Enter pertinent data for each system on the hydraulic placard.

2.08 SWITCHES:

A. Contain in a weatherproof die cast/red baked enamel, oil resistant, aluminum housing with tamper resistant screws, 13 mm (1/2 inch) conduit entrance and necessary facilities for attachment to the valves. Provide two SPDT switches rated at 2.5 amps at 24 VDC.

B. Water flow Alarm Switches: Mechanical, non-coded, non-accumulative retard and adjustable from 0 to 60 seconds minimum. Set flow switches at an initial setting between 20 and 30 seconds.

C. Valve Supervisory Switches for Ball and Butterfly Valves: May be integral with the valve.

2.09 ELECTRIC BELL:

A. UL listed and Factory Mutual approved electric alarm bell.

2.10 GAUGES

A. Provide gauges as required by NFPA 13.

2.11 PIPE HANGERS AND SUPPORTS

A. Supports, hangers, etc., of an approved pattern placement to conform to NFPA 13. System piping shall be substantially supported to the building structure. The installation of hangers and supports shall adhere to the requirements set forth in NFPA 13, Standard for Installation of Sprinkler Systems. Materials used in the installation or construction of hangers and supports shall be listed and approved for such application. Hangers or supports not specifically listed for service shall be designed and bear the seal of a professional engineer.

2.12 WALL, FLOOR AND CEILING PLATES

A. Provide chrome plated steel escutcheon plates for exposed piping passing though walls, floors or ceilings.

PART 3 EXECUTION

3.01 INSTALLATION

A. Installation shall be accomplished by the licensed contractor. Provide a qualified technician, experienced in the installation and operation of the type of system being installed, to supervise the installation and testing of the system.

B. Installation of Piping: Accurately cut pipe to measurements established by the installer and work into place without springing or forcing. In any situation where bending of the pipe is required, use a standard pipe-bending template. Install concealed piping in spaces that have finished ceilings. Where ceiling mounted equipment exists, install sprinklers so as not to obstruct the movement or operation of the equipment. Sidewall heads may need to be utilized. Locate piping in stairways as near to the ceiling as possible to prevent tampering by unauthorized personnel, and to provide a minimum headroom clearance of 2250 mm (seven feet six inches). To prevent an obstruction to egress, provide piping clearances in accordance with NFPA 101.

C. Welding: Conform to the requirements and recommendations of NFPA 13.

D. Drains: Pipe drains to discharge at safe points outside of the building or to sight cones attached to drains of adequate size to readily carry the full flow from each drain under maximum pressure. Do not provide a direct drain connection to sewer system or discharge into sinks. Install drips and drains where necessary and required by NFPA 13.

E. Supervisory Switches: Provide supervisory switches for sprinkler control valves.

F. Waterflow Alarm Switches: Install waterflow switch and adjacent valves in easily accessible locations.

G. Inspector's Test Connection: Install and supply in conformance with NFPA 13, locate in a secured area, and discharge to the exterior of the building.

H. Affix cutout disks, which are created by cutting holes in the walls of pipe for flow switches and non-threaded pipe connections to the respective waterflow switch or pipe connection near to the pipe from where they were cut.

I. Provide pressure gauge at each water flow alarm switch location and at each main drain connection.

J. For each fire department connection, provide the symbolic sign given in NFPA 170 and locate 2400 to 3000 mm (8 to 10 feet) above each connection location. Size the sign to 450 by 450 mm (18 by 18 inches) with the symbol being at least 350 by 350 mm (14 by 14 inches).

K. Securely attach identification signs to control valves, drain valves, and test valves. Locate hydraulic placard information signs at each sectional control valve where there is a zone water flow switch.

L. Repairs: Repair damage to the building or equipment resulting from the installation of the sprinkler system by the installer at no additional expense to the Owner.

3.02 INSPECTION AND TEST

A. Preliminary Testing: Flush newly installed systems prior to performing hydrostatic tests in order to remove any debris which may have been left as well as ensuring piping is unobstructed. Hydrostatically test system, including the fire department connections, as specified in NFPA 13, in the presence of the Owners or his designated representative. Test and flush underground water line prior to performing these hydrostatic tests.

B. Final Inspection and Testing: Subject system to tests in accordance with NFPA 13, and when all necessary corrections have been accomplished, advise Owner to schedule a final inspection and test. Connection to the fire alarm system shall have been in service for at least ten days prior to the final inspection, with adjustments made to prevent false alarms. Furnish all instruments, labor and materials required for the tests and provide the services of the installation foreman or other competent representative of the installer to perform the tests. Correct deficiencies and retest system as necessary, prior to the final acceptance. Include the operation of all features of the systems under normal operations in test.

3.03 INSTRUCTIONS

A. Furnish the services of a competent instructor for not less than two hours for instructing personnel in the operation and maintenance of the system, on the dates requested by the Owner.

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

A. The requirements listed in this section are supplemental to the Division 01 General Requirements.

B. It shall be the responsibility of the Plumbing and Mechanical Contractor to examine and refer to all Architectural, Civil, Structural, Electrical, and Landscape and specifications for construction conditions which may affect the scope of Plumbing and HVAC work. Inspect the building site and existing facilities for verification of present conditions. Make proper provisions for these conditions in performance of the work and cost thereof.

C. Plumbing and Mechanical work for this project shall include all items, articles, materials and the associated labor mentioned, scheduled or shown in these specifications and in the accompanying drawings.

D. Furnish and install all equipment, materials and any required incidental items required by good practice to complete the systems described herein.

1.2 CODES AND STANDARDS

A. Work shall meet the requirements of the plans and specifications and shall not be less than the minimum requirements of applicable sections of the latest Codes and Standards of the following Organizations:

1. American Gas Association (AGA)
2. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)
3. American Society of Mechanical Engineers (ASME)
4. Sheet Metal and Air Conditioning Contractors' National Association Inc. (SMACNA)
5. American Water Works Association (AWWA)
6. National Electrical Code (NEC)
7. National Electrical Manufacturers Association (NEMA)
8. National Fire Protection Association (NFPA)
9. Uniform Plumbing Code (UPC)
10. Occupational Safety & Health Act (OSHA)
11. Plastic Pipe Institute (PPI)
12. International Mechanical Code (IMC)
13. International Fuel Gas Code (IFGC)
14. International Building Code (IBC)
15. International Energy Conservation Code (IECC)
16. Requirements of the Serving Utility Company
17. Local and State Codes and Ordinances

1.3 FEES AND PERMITS

A. The Plumbing and Mechanical Contractors shall pay all fees and arrange all permits required for work done under their contract and under their supervision by subcontract.

B. All usage contracts between the Owner and the serving utilities company, such as membership and usage charges or fees, etc., for the purpose of obtaining the services for the utility company shall be applied for and paid for by the Owner.

1.4 MATERIALS AND EQUIPMENT

A. Manufacturer's trade names and catalog numbers listed are intended to indicate the quality of equipment or materials desired. Manufacturers not listed in the specification will be considered substitutions and must have prior approval.

B. See Division 01 for Substitutions Procedures. Requests for substitution are to be submitted sufficiently ahead of the deadline, to give ample time for examination. Prior approval request for substitution must indicate the specific item or items to be furnished in lieu of those scheduled, together with complete technical and comparative data on scheduled items and items proposed for substitution.

C. If the engineer approves any proposed substitution, the approved product will be listed in an addendum. Bidders shall not rely on approval made in any other manner.

D. Mechanical equipment may be installed with manufacturer's standard finish and color except where specific color, finish or choice is indicated. If the manufacturer has no standard finish, equipment shall have a prime coat and two finish coats of gray enamel.

E. High altitude operation: Capacity of all equipment is to be sized and manufactured to perform at the elevation of the project site. If not specifically indicated in the equipment schedule or in the specifications provide all required accessories and equipment for proper operation at elevation of the project site.

F. This Contractor shall be responsible for materials and equipment installed under this contract. Contractor shall also be responsible for the protection of materials and equipment of others from damage as a result of his work.

G. Manufactured material and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned as directed by manufacturer unless herein specified to the contrary.

H. This Contractor shall make the required arrangement with the General Contractor or Construction Manager for the introduction into the building of equipment too large to pass through finished openings.

I. Store materials and equipment indoors at the job site. If this is not possible, store on raised platforms and protect from the weather by means of waterproof covers. Coverings shall permit circulation of air around the materials to prevent condensation of moisture. Screen or cap openings in equipment to prevent the entry of vermin.

1.5 INTENT OF DRAWINGS

A. The drawings are diagrammatic and do not necessarily show exact location of piping and ductwork unless specifically dimensioned. Riser and other diagrams are schematic and do not necessarily show the physical arrangement of the equipment. They shall not be used for obtaining lineal runs of piping or ductwork, nor shall they be used for shop drawings for piping and ductwork fabrication or ordering. Discrepancies shown on different plans, or between plans and actual field conditions shall be brought to the attention of the Architect/Engineer for resolution.

1.6 COMMISSIONING OF SYSTEMS

A. Mechanical systems where the total mechanical equipment capacity is greater than 480,000 Btu/hr cooling capacity and 600,000 Btu/hr heating capacity shall be commissioned in accordance with the provisions of C408 of the International Energy Conservation Code by a registered professional. The mechanical contractor shall be responsible for all cost associated with commissioning.

1.7 RESPONSIBILITY

A. Plumbing and HVAC work shall conform to requirements of all divisions 22 and 23 specifications.

B. The Plumbing and Mechanical Contractors shall be responsible for the installation of a satisfactory and complete system in accordance with the intent of the drawing and specifications. Provide, at no extra cost, all incidental items, materials, accessories and labor required for completion of the work even though they are not specifically mentioned or indicated on the drawings or in the specifications.

C. The drawings do not attempt to show complete details of the building construction which affect the mechanical and plumbing installation; and reference is therefore required to the Architectural, Civil, Structural, Landscape and Electrical drawings and specifications and to shop drawings of all trades for additional details which affect the installation of the work covered under this Division of the Contract.

D. Location of mechanical and plumbing system components shall be checked for conflicts with openings, structural members and components of other systems having fixed locations. In the event of any conflicts, the Architect/Engineer shall be consulted and their decision shall govern. Necessary changes shall be made at the Contractor’s expense.

E. Determine, and be responsible for, the proper location and character of inserts for hangers, chases, sleeves, and other openings in the construction required for the work, and obtain this information well in advance of the construction progress so work will not be delayed.

F. Final location of inserts, hangers, etc., required for each installation, must be coordinated with facilities required for other installations to prevent interference.

G. Take extreme caution not to install work that connects to equipment until such time as complete Shop Drawings of such equipment have been approved by the Architect/Engineer. Any work installed by the Contractor, prior to approval of Shop Drawings, will be at the Contractor's risk.

H. All modifications and changes required due to installation of equipment other than the scheduled equipment shall be made at the contractor’s expense.

I. It shall be the responsibility of the installing contractor to coordinate changes to work by other trades that result from the installation of equipment other than the scheduled equipment.

J. If the provided equipment is heavier or larger than the scheduled or specified equipment, it shall be the responsibility of the installing contractor to coordinate the required structural changes and pay for any and all associated cost.

K. If the provided equipment has different motor characteristics or electrical requirements than the scheduled or specified equipment, it shall be the responsibility of the installing contractor to coordinate the required changes and pay for any and all associated cost.

L. If larger or additional electrical conduits, wire or breakers are required due to the installation of equipment other than the scheduled or specified equipment it shall be the responsibility of the installing contractor to coordinate the required changes and pay for any and all associated cost.

M. If the provided equipment requires different fluid flow rates than the scheduled or specified equipment, it shall be the responsibility of the installing contractor to coordinate all required changes including but not limited to pumps, piping, valves, etc and pay for any and all associated cost.

N. At all times during the performance of this Contract, properly protect work from damage and protect the Owner's property from injury of loss. Make good any damage, injury or loss, except such as may be directly due to errors in the Bidding Documents or caused by Agents or Employees of the Owner. Adequately protect adjacent property as provided by law and the Bidding Documents. Provide and maintain passageways, guard fences, lights and other facilities for protection required by Public Authority or Local conditions.

O. The Contractor shall be responsible for damages incurred due to the work of their contractors, to the building or its contents, people, etc.

1.8 REVIEW

A. All work and material is subject to review at any time by the Architect/Engineer or his representative. If the Architect/Engineer or his representative finds material that does not conform to these specifications or that is not properly installed or finished, correct the deficiencies in a manner satisfactory to the Architect/Engineer at the Contractor’s expense.

1.9 WORKMANSHIP

A. Work under this contract shall be performed by workmen skilled in the particular trade, including work necessary to properly complete the installation in a workmanlike manner to present a neat and finished appearance.

B. Obtain Architect's/Engineer's approval before performing any cutting on structural members or patching of building surfaces. Any damage to the building or equipment by the Mechanical or Plumbing Contractor shall be the responsibility of the Mechanical or Plumbing Contractor and shall be repaired by skilled craftsmen of the trades involved at the Contractor’s expense.

C. Chases, openings, sleeves, hangers, anchors, recesses, equipment pads, and framing for equipment; shall be provided by others only if so noted on the drawings. Otherwise, they will be provided by the Mechanical or Plumbing Contractor for their work.

1.10 COORDINATION

A. This Mechanical and Plumbing Contractors shall plan their work to proceed with a minimum interference with other trades and it shall be their responsibility to inform the General Contractor of all openings required in the building structure for installation of work, and to provide sleeves as required. Dimensions of equipment installed and/or provided by others shall be checked so that correct clearances and connections may be made.

B. In general, pipelines requiring gravity drainage shall be installed first, followed by ductwork, large piping mains and electrical conduit. The location of fire protection piping and heads shall be coordinated with other trades to ensure that installations by other trades do not block heads.

C. Leave sufficient space for the installation of insulation on piping and ductwork as specified. It is not acceptable to compress pipe or duct insulation for any reason.

1.11 CLEANING

A. Keep the job site clean. The Mechanical and Plumbing Contractors shall remove all waste and rubbish associated with their work.

B. Upon completion of work, remove materials, scraps and debris related to plumbing and mechanical work and leave all spaces including tunnels, crawlspaces, pipe or duct chases and ceiling plenums clean and orderly.

C. The Mechanical and Plumbing contractors will be responsible for cleaning the exterior and interior of all equipment prior to star-up. Once all equipment has been cleaned it shall be inspected by the Architect/Engineer prior to start-up.

D. The Mechanical and Plumbing Contractors shall provide dust protection of existing materials and equipment as well a new materials and equipment for the duration of the project. Protect existing materials and equipment from damage for the duration of the project. Clean the exterior and interior of all existing equipment at the completion of the project.

1.12 TEMPORARY FACILITIES

A. Offices
1. The Mechanical and Plumbing Contractor must have the permission of the Owner and General Contractor or Construction Manager to install a temporary office/job trailer on the project site.
2. The Contractor shall completely remove his temporary installations when no longer needed and the premises shall be completely clean, disinfected, patched, and refinished to match adjacent areas.

B. Ladders and Scaffolds
1. The Mechanical and Plumbing Contractors shall provide their own ladders, scaffolds, etc. of substantial construction for access to their work in various portions of the building as may be required. When no longer needed, they shall be removed by the Contractor.

C. Protection Devices
1. The Mechanical and Plumbing Contractors shall provide and maintain his own necessary barricades, fences, signal lights, etc., required by all governing authorities or shown on the drawings. When no longer needed, they shall be removed by the Contractor.

D. TEMPORARY FIRE PROTECTION
1. The Mechanical and Plumbing Contractors shall provide all necessary first aid hand fire extinguishers for Class A, B, C and special hazards as may exist in his own work area only in accordance with good and safe practice and as required by jurisdictional safety authority.

1.13 SUBMITTALS

A. Submittals will be required for each piece of equipment, material or product as noted in the table below. All submittals shall be submitted, reviewed and all discrepancies addressed prior to ordering equipment or starting work. Any equipment ordered without having first completed the

submittal process is done at the risk of the contractor. Any work performed prior to completing the submittal process is done at the risk of the contractor.

Specification Section	Product Data	Performance Data	Shop Drawing	Delegated Design	Wiring Diagram	Color Chart	Sustainability Compliance	Notes
220500	X			X				Provide Delegated Design per the requirements of this section
220523	X							
220529	X			X				Provide Delegated Design per the requirements of this section
220548	X			X				Provide Delegated Design per the requirements of this section
220553	X							
221116	X							
221119	X							
221316	X						X	
221319	X							
224100	X	X	X			X	X	
230593								Provide T&B Certifications
230713	X	X					X	
233113								
233300	X	X						
233346	X							
233713	X	X						

B. Submittal Definitions

1. Product Data: Provide manufacturers' cut sheets that include general product information including but not limited to, model number, physical data, nominal capacities, and rough-in requirements.

2. Performance Data: Provide detailed performance and capacities based on project specific requirements including but not limited to: flow rates, capacities, pressure loss, temperatures, fan curves, pump curves, part load performance, sound data, and electrical characteristics.

3. Shop Drawings: Provide detailed drawings of the equipment showing overall dimensions, location of electrical and piping connection, location of anchorage points, location of electrical and control panels, and all operating, service and maintenance clearances.

4. Delegated Design: Provide detailed drawings prepared and stamped by a registered Professional Engineer, that detail pertinent design criteria, the materials and products to be installed and the required installation locations.

5. Wiring Diagram: Provide diagrams that identify and detail required field wiring.

6. Color Chart: Provide a physical color chart of material samples required for selection of equipment colors.

7. Sustainability Compliance: Provide literature that indicates a products compliance with LEED or Green Globes. See Division 01 for additional information and requirements.

C. Submittal Formats:
1. Include the following information with each submittal:
   a. Project Name
   b. Submittal Date
   c. Name of Architect
   d. Name of Engineer
   e. Name of General Contractor or Construction Manager
   f. Name of Sub-Contractor
   g. Name of firm or entity that prepared the submittal
   h. Unique Submittal Number
   i. Type of Submittal
   j. Specification Section
   k. Name or Mark of equipment or material and detail or drawings reference.

2. All Submittals with the exception of color charts or material samples shall be electronically transmitted PDFs.

D. Submittal Requirements
1. Submittals shall be submitted as a complete specification section. The submittal must include all materials and equipment for that specification section. Submittals for individual materials of equipment will be rejected without review.

2. Submittals shall be complete, clearly show item used, size, dimensions, capacity, rough in, etc., as required for complete check and installation. Manufacturer's literature showing more than one item shall be clearly marked as to which item is being furnished or it will be rejected and returned without review.

3. Each submittal shall be thoroughly checked by the Contractor for compliance with the Contract Document requirements, accuracy of dimensions, relationship to the work of other trades, and conformance with sound, safe practices as to erection and installation. Each submittal shall then bear a stamp evidencing such checking and shall show corrections made, if any. Submittals requiring extensive corrections shall be revised before submission. Each submittal not stamped and signed by the Contractor evidencing such checking will be rejected and returned without review.

4. On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations. Include relevant additional information and revisions, other than those requested on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

5. Review of the shop drawings and literature by the engineer shall not relieve the contractor for responsibility for deviations from the drawings or specifications, nor shall it relieve the contractor from responsibility for errors in the shop drawings or literature. It is the responsibility of the contractor to provide materials and equipment which meet the specifications and job requirements.

1.14 OPERATION AND MAINTENANCE MANUALS

A. Operation and Maintenance Manuals (O&M Manuals) shall contain:

1. Names and contact information for the Project Architect, Project Engineer.
2. Names and contact information for the General Contractor or Construction Manager.
3. Names and contact information for sub-contractors.
4. Installation, maintenance and operating instructions for each piece of equipment.
5. Parts lists
6. Wiring Diagrams
7. Equipment Start-up and inspection certificates
8. Test and Balance Reports
9. Commissioning Reports
10. Copies of Equipment Warranties
11. Copies of Submittals
12. Record Drawings.

B. Prior to substantial completion, submit an electronic copy of the O&M manual in PDF format to the Architect, Engineer and Owner for Review and approval. The PDF shall be one file with an index and hyperlinks to each section. Individual bound PDFs without automated navigation will be rejected. All O&M data shall be grouped by the equipment type and ordered by the specification numbering.

C. Prior to final payment a final electronic copy of the O&M manual on an archival quality DVD as well as two printed copies, shall be furnished to the owner. Printed copies shall have commercial quality 8-1/2” x 11” 3-ring binders with tabbed dividers for each section.

1.15 AS-BUILT RECORD DRAWINGS

A. The Contractor shall furnish to the Owner and Architect/Engineer a marked print showing the location of all concealed or underground pipe or conduit runs and other equipment installed other than as shown on the drawings. Dimension underground lines from established building lines. Indicate all installed pull boxes in conduit runs.

B. The Contractor shall furnish to the Architect/Engineer a marked print showing the location of all mechanical equipment, plumbing fixtures, piping, ductwork, diffusers, grilles, etc. The location of any item which deviates from the bid documents shall be accurately drawn and dimensioned.

C. All underground piping and ductwork shall be dimensioned from nearest column and/or exterior walls. The location of all maintenance related items, such as duct access doors, fire dampers, isolation valves, filters, etc., shall be highlighted on the as built drawing.

1.16 PLACING SYSTEM INTO OPERATION

A. Prior to the starting of equipment, the Mechanical or Plumbing Contractor shall thoroughly inspect the installation and any work completed by other trades and subcontractors to verify compliance with the contract documents.

B. Start-up of all HVAC equipment shall be completed by factory trained representatives. At the completion of start-up, the factory representative shall submit to the architect and engineer, a start-up report that indicates any problems encountered, potential problems including installation issues, adjustments made or required to be made to ensure proper operation of the equipment. Any installation deficiencies identified shall be corrected at no additional cost to the owner.

1.17 OWNER TRAINING

A. General
   1. The system training is intended to familiarize the Owner's operating and maintenance staff with all systems requiring maintenance. Training is to be provided after the systems are in place and operational, after issues noted during commissioning have been resolved, and before final acceptance.
   2. Provide second set of training sessions for automatic control systems about 6-9 months after the first sessions.

B. Systems Requiring Training
   1. All mechanical, electrical, safety, standby, and automatic control systems in the project, and other systems specified elsewhere to have training.

C. Attendance:
   1. Training is to be provided by contractor's representatives that are familiar with the system's operation and maintenance requirements. Individual training sessions (modules) shall be provided for each type or group of systems, separated roughly by trade group that will be performing maintenance on the system. The trades groups and systems typically requiring training are:
      a. HVAC & Refrigeration (refrigeration, packaged cooling systems, packaged rooftop units, fan systems, controls)
      b. Plumbers (Domestic and Sanitary Plumbing, packaged rooftop units, miscellaneous process piping systems)

D. Schedule:
   1. Duplicate training sessions are to be provided for each training module, so that the Owner's operating personnel can be split into two groups during training. Duplicate training sessions shall be scheduled on different days. Length of training sessions will be determined by scope of training indicated below, and as coordinated with Owner after draft copy of training documents have been reviewed.

E. Training Documentation:
   1. Contractor to submit draft copy of agenda and training documents to Owner for review at least two weeks prior to training date.
   2. Provide a copy of the following items for each person that will be attending the training sessions. Coordinate required number with the Owner.
      a. Training agenda.
      b. Summary of new systems and existing systems affected by this project.
      c. Summary of work performed under this project.
      d. Control system drawings and sequences of operation.
      e. List of important maintenance and trouble-shooting operations for all systems.
   3. Provide minimum of 2 copies of following items:
      a. Contract documents including all drawings, specifications, addendums, and change orders.

F. Training Sessions:
   1. Assemble at location to be determined by the Owner.
   2. Distribute training documentation as indicated above.
   3. Provide classroom style training if required for orientation and discussion of new systems and existing systems affected by this project, and other issues appropriate for a classroom format.
   4. Visit site and review locations; and perform detailed review of operation and maintenance requirements for current systems.

1.18 WARRANTY

A. The Contractor shall guarantee that all materials and labor installed are new and of first quality and that any material or labor found defective shall be replaced without cost to the Owner within one (1) year after substantial completion of the Contract or one (1) full season of heating and cooling operation, whichever is the greater. The guarantee shall list the date of the beginning of the one (1) year period, which shall be the date that the Substantial Completion Certificate is issued.

B. Any damage to the building, caused by defective work or material of the Contractor within the above-mentioned period, shall be satisfactorily repaired without cost to the Owner.

C. The guarantee does not include maintenance of equipment. The Owner shall accept full responsibility for proper operation and maintenance of equipment immediately upon substantial completion and occupancy of the building.

D. Final acceptance by the Owner will not occur until all operating instructions are mounted in Equipment Rooms and Operating Personnel are thoroughly indoctrinated in the operation of all mechanical equipment by the Contractor.

E. No equipment installed as part of this project shall be used for temporary heat during construction.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. Section includes the following:
1. Expansion Fittings and Loops for Piping Systems
2. Alignment Guides and Anchors
3. Dielectric Fittings
4. Pipe Sleeves
5. Sleeve Seals Systems for Piping
6. Silicone Sealant
7. Escutcheons for Piping
8. Floor Plates

1.02 SUBMITTALS

A. See Section 220000 “General Requirements of Plumbing and HVAC” for Submittal requirements.

1.03 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Pipe and Pressure-Vessel Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

1.04 PERFORMANCE REQUIREMENTS

A. Compatibility: Products shall be suitable for piping service fluids, materials, working pressures, and temperatures.

B. Capability: Products to absorb 200 percent of maximum axial movement between anchors.

PART 2 PRODUCTS

2.01 EXPANSION FITTINGS AND LOOPS FOR PIPING SYSTEMS

A. Rubber Union Connector Expansion Joints
1. Manufacturers: Subject to compliance with requirements, provide products by the following:
   a. Mason Industries, Inc.
   b. MetraFlex.
   c. Twin City Hose.
2. Material: Twin reinforced-rubber spheres with external restraining cables.
3. Minimum Pressure Rating: 150 psig at 170 deg F, unless otherwise indicated.
4. End Connections for NPS 2 and Smaller: Threaded.

B. Flexible-Hose Packless Expansion Joints:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Mason Industries, Inc.
   b. Metraflex Company (The).
   c. Twin City Hose Inc.
2. Description: Manufactured assembly with inlet and outlet elbow fittings and two flexible-metal-hose legs joined by long-radius, 180-degree return bend or center section of flexible hose.
3. Flexible Hose: Corrugated-metal inner hoses and braided outer sheaths.
4. Expansion Joints for Copper Tubing NPS 2 and Smaller: Copper-alloy fittings with solder-joint end connections.
   a. Bronze hoses and single-braid bronze sheaths with 450 psig at 70 deg F and 340 psig at 450 deg F ratings.
5. Expansion Joints for Copper Tubing NPS 2-1/2 to NPS 4: Copper-alloy fittings with threaded end connections.
   a. Stainless-steel hoses and single-braid, stainless-steel sheaths with 300 psig at 70 deg F and 225 psig at 450 deg F ratings.
6. Expansion Joints for Steel Piping NPS 2 and Smaller: Carbon-steel fittings with threaded end connections.
   a. Stainless-steel hoses and single-braid, stainless-steel sheaths with 450 psig at 70 deg F and 325 psig at 600 deg F ratings.
7. Expansion Joints for Steel Piping NPS 2-1/2 to NPS 6: Carbon-steel fittings with flanged end connections.
   a. Stainless-steel hoses and single-braid, stainless-steel sheaths with 200 psig at 70 deg F and 145 psig at 600 deg F ratings.

2.02 ALIGNMENT GUIDES AND ANCHORS

A. Alignment Guides
1. Description: Steel, factory-fabricated alignment guide, with bolted two-section outer cylinder and base for attaching to structure; with two-section guiding slider for bolting to pipe.

B. Anchor Materials:
1. Steel Shapes and Plates: ASTM A 36/A 36M.
2. Bolts and Nuts: ASME B18.10 or ASTM A 183, steel hex head.
3. Washers: ASTM F 844, steel, plain, flat washers.
4. Mechanical Fasteners: Insert-wedge-type stud with expansion plug anchor for use in hardened portland cement concrete, with tension and shear capacities appropriate for application.
   a. Stud: Threaded, zinc-coated carbon steel.
   b. Expansion Plug: Zinc-coated steel.
   c. Washer and Nut: Zinc-coated steel.
5. Chemical Fasteners: Insert-type stud, bonding-system anchor for use with hardened portland cement concrete, with tension and shear capacities appropriate for application.
   a. Bonding Material: ASTM C 881/C 881M, Type IV, Grade 3, two-component epoxy resin suitable for surface temperature of hardened concrete where fastener is to be installed.
   b. Stud: ASTM A 307, zinc-coated carbon steel with continuous thread on stud, unless otherwise indicated.
   c. Washer and Nut: Zinc-coated steel.
6.

2.03 DIELECTRIC FITTINGS

A. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.

B. Dielectric Unions:
1. Dielectric Unions are not allowed.

C. Dielectric Flanges:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Capitol Manufacturing Company; member of the Phoenix Forge Group.
   b. Central Plastics Company.
   c. Matco-Norca.
   d. Watts; a division of Watts Water Technologies, Inc.
   e. Wilkins; a Zurn company.
2. Standard: ASSE 1079.
3. Factory-fabricated, bolted, companion-flange assembly.
4. Pressure Rating: 175 psig.
5. End Connections: Solder-joint copper alloy and threaded ferrous; threaded solder-joint copper alloy and threaded ferrous.

D. Dielectric-Flange Insulating Kits:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Advance Products & Systems, Inc.
   b. Calpico, Inc.
   c. Central Plastics Company.
   d. Pipeline Seal and Insulator, Inc.
2. Nonconducting materials for field assembly of companion flanges.
3. Pressure Rating: 150 psig.
4. Gasket: Neoprene or phenolic.
5. Bolt Sleeves: Phenolic or polyethylene.
6. Washers: Phenolic with steel backing washers.

E. PEX Dielectric Separator:
1. Description: 6” long section of pex piping shall be installed between dis-similar piping materials.
2. Pipe Material: PEX plastic according to ASTM F 876.
3. Oxygen Barrier: O2 permeability <= 0.32 mg/m2/day in accordance with DIN 4726.
4. Fittings: ASTM F 1960, cold expansion fittings and reinforcing rings.
5. Pressure/Temperature Rating: Minimum 100 psig and 180 deg F.

2.04 SLEEVES

A. Galvanized-Steel Sheet Pipe Sleeves: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.

2.05 SLEEVE-SEAL SYSTEMS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Advance Products & Systems, Inc.
2. CALPICO, Inc.
3. GPT; an EnPro Industries company.

4. Metraflex Company (The).

B. Description:
1. Modular sealing-element unit, designed for field assembly, for filling annular space between piping and sleeve.
2. Designed to form a hydrostatic seal of 20-psig.
3. Sealing Elements: EPDM-rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size.
4. Pressure Plates: Composite plastic.
5. Connecting Bolts and Nuts: Stainless steel of length required to secure pressure plates to sealing elements.

2.06 SILICONE SEALANTS

A. Silicone, S, P, 25, T, NT: Single-component, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade P, Class 25, Uses T and NT. Grade P Pourable (self-leveling) formulation is for opening in floors and other horizontal surfaces that are not fire rated.

2.07 ESCUTCHEONS

A. One-Piece, Cast-Brass Type: With polished, chrome-plated finish and setscrew fastener.

B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with chrome-plated finish and spring-clip fasteners.

C. One-Piece, Stamped-Steel Type: With chrome-plated finish and spring-clip fasteners.

2.08 FLOOR PLATES

A. One-Piece Floor Plates: Cast-iron flange with holes for fasteners.

PART 3 EXECUTION

3.01 EXPANSION JOINT INSTALLATION

A. Install expansion joints of sizes matching sizes of piping in which they are installed.

B. Install expansion joint per the manufacture’s written instructions.

3.02 ALIGNMENT-GUIDE AND ANCHOR INSTALLATION

A. Install alignment guides to guide expansion and to avoid end-loading and torsional stress.

B. Install two guide(s) on each side of pipe expansion fittings and loops. Install guides nearest to expansion joint not more than four (4) pipe diameters from expansion joint.

C. Attach guides to pipe, and secure guides to building structure.

D. Install anchors at locations to prevent stresses from exceeding those permitted by ASME B31.9 and to prevent transfer of loading and stresses to connected equipment.

E. Anchor Attachments:
1. Anchor Attachment to Steel Pipe: Attach by welding. Comply with ASME B31.9 and ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."
2. Anchor Attachment to Copper Tubing: Attach with pipe hangers. Use MSS SP-69, Type 24; U bolts bolted to anchor.

F. Fabricate and install steel anchors by welding steel shapes, plates, and bars. Comply with ASME B31.9 and AWS D1.1/D1.1M.
1. Anchor Attachment to Steel Structural Members: Attach by welding.
2. Anchor Attachment to Concrete Structural Members: Attach by fasteners. Follow fastener manufacturer's written instructions.

G. Use grout to form flat bearing surfaces for guides and anchors attached to concrete.

3.03 DIELECTRIC FITTING INSTALLATION

A. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.

B. Install Dielectric fittings per the manufacturers written instructions.

C. Install pipe hangers immediately upsteam and downstream of dielectric fittings.

D. Install isolation valves immediately upsteam and downstream of dielectric fittings.

E. Dielectric Fittings for NPS 2 and Smaller: PEX Dielectric Separator.

F. Dielectric Fittings for NPS 2-1/2 and Larger: Dielectric Flange.

3.04 SLEEVE INTALLATION

A. Install sleeves for piping passing through penetrations in floors, partitions, roofs, and walls.

B. For sleeves that will have sleeve-seal system installed, select sleeves of size large enough to provide 1-inchannular clear space between piping and concrete slabs and walls.

C. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.
1. Cut sleeves to length for mounting flush with both surfaces.
    a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inchesabove finished floor level.
2. Using silicone sealant, seal space outside of sleeves in slabs and walls without sleeve-seal system.

D. Fire-Resistance-Rated Penetrations, Horizontal Assembly Penetrations, and Smoke-Barrier Penetrations: Maintain indicated fire or smoke rating of walls, partitions, ceilings, and floors at pipe penetrations. Seal pipe penetrations with fire- and smoke-stop materials. Comply with requirements for firestopping and fill materials specified in Section 078413 "Penetration Firestopping."

3.05 SLEEVE-SEALS SYSTEM INSTALLATION

A. Install sleeve-seal systems in sleeves in exterior concrete walls at piping entries into building.

B. Select type, size, and number of sealing elements required for piping material and size and for sleeve ID or hole size. Position piping in center of sleeve. Center piping in penetration, assemble sleeve-seal-system components, and install in annular space between piping and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make a watertight seal.

3.06 SLEEVE-SEAL SCHEDULE

A. Use sleeve and sleeve-seals for the following piping-penetration applications:
1. Exterior Concrete Walls Above Grade: Galvanized-Steel Sheet Pipe Sleeves with Sleeve-seal system
2. Exterior Concrete Walls Below Grade: Galvanized-Steel Sheet Pipe Sleeves with Sleeve-seal system
3. Interior or Exterior Concrete Slabs-on-Grade: Sleeve not required.
4. Interior Concrete Slabs Above Grade: Galvanized-Steel Sheet Pipe Sleeves with Silicone Sealant or Fire calk
5. Interior Partitions: Sleeve not require – fire calk penetrations of rated assemblies.

3.07 ESCUTCHEON INSTALLATION

A. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.

B. Install escutcheons with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.

3.08 FLOOR PLATE INSTALLATION

A. Install floor plates for piping penetrations of equipment-room floors.

B. Install floor plates with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:
1. Ball Valves
2. Butterfly Valves
3. Bronze Gate Valves
4. Iron Gate Valve
5. Bronze Check Valves
6. Iron Swing Check Valves
7. Iron Silent Check Valves

1.2 SUBMITTALS

A. See Section 220000 “General Requirements for Pluming and HVAC” for submittal requirements.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.

B. ASME Compliance:

1. ASME B1.20.1 for threads for threaded-end valves.
2. ASME B16.1 for flanges on iron valves.
3. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
4. ASME B16.18 for solder-joint connections.
5. ASME B31.1 for power piping valves.
6. ASME B31.9 for building services piping valves.

C. Bronze valves shall be made with dezincification-resistant materials. Bronze valves made with copper alloy (brass) containing more than 15 percent zinc are not permitted.

D. Refer to valve schedule articles for applications of valves.

E. Valve Pressure-Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

F. Valve Sizes: Same as upstream piping unless otherwise indicated.

G. Valves in Insulated Piping:

1. Include 2-inch (50-mm) stem extensions.
2. Extended operating handle of nonthermal-conductive material, and protective sleeves that allow operation of valves without breaking the vapor seals or disturbing insulation.

3. Memory stops that are fully adjustable after insulation is applied.

2.2 BRONZE BALL VALVES, TWO-PIECE WITH FULL PORT AND STAINLESS-STEEL TRIM:

A. Manufacturers: Provide products from one of the following:
1. Apollo
2. Nibco
3. Milwaukee
4. Watts

B. Description:
1. Standard: MSS SP-110.
2. SWP Rating: 150 psig.
3. CWP Rating: 600 psig.
4. Body Design: Two piece.
5. Body Material: Bronze.
6. Ends: Solder or Threaded.
7. Seats: PTFE.
8. Stem: Stainless steel.
9. Ball: Stainless steel, vented.
10. Port: Full.

2.3 BRONZE GATE VALVES, NRS, CLASS 150:

A. Manufacturers: Provide products from one of the following:
1. Apollo
2. Nibco
3. Crane
4. Milwaukee

B. Description:
1. Standard: MSS SP-80, Type 1.
2. CWP Rating: 300 psig.
3. Body Material: ASTM B 62, bronze with integral seat and union-ring bonnet.
4. Ends: Threaded.
5. Stem: Bronze.
6. Disc: Solid wedge; bronze.
7. Packing: Asbestos free.
8. Handwheel: Malleable iron, bronze, or aluminum.

2.4 BRONZE SWING CHECK VALVES WITH BRONZE DISC, CLASS 125:

A. Manufacturer: Provide products from one of the following:
1. Apollo
2. Crane
3. Nibco
4. Watts

B. Description:
1. Standard: MSS SP-80, Type 3.
2. CWP Rating: 200 psig (1380 kPa).
3. Body Design: Horizontal flow.

4. Body Material: ASTM B 62, bronze.
5. Ends: Threaded or soldered. See valve schedule articles.
6. Disc: Bronze.

PART 3 - EXECUTION

3.1 VALVE INSTALLATION

A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.

B. Locate valves for easy access and provide separate support where necessary.

C. Install valves in horizontal piping with stem at or above center of pipe.

D. Install valves in position to allow full stem movement.

3.2 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

A. If valves with specified SWP classes or CWP ratings are unavailable, the same types of valves with higher SWP classes or CWP ratings may be substituted.

B. Select valves with the following end connections:

1. For Copper Tubing, NPS ½" – 2" and Smaller: solder ends.
2. For Steel Piping, NPS 2" and Smaller: Threaded ends.
3. For Steel Piping NPS 2-1/2" and larger: Flanged or Grooved ends.

3.3 VALVE SCHEDULE

A. Domestic Water ½" – 2" NPS: Ball Valve, Solder or Threaded Ends

B. Domestic Water 2-1/2" NPS and Larger: Butterfly Valve, Lug Type

3.4 CHECK VALVE SCHEDULE

A. Pump Discharge ½" – 2" NPS: Bronze Swing Check, Threaded or Solder Ends

B. Pump Discharge 2-1/2" NPS and Larger: Iron Body Globe Style Silent Check, Flanged Ends

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metal pipe hangers and supports.
2. Trapeze pipe hangers.
3. Thermal-hanger shield inserts.
4. Fastener systems.
5. Pipe positioning systems.
6. Equipment supports.

1.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design trapeze pipe hangers and equipment supports, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Structural Performance: Hangers and supports for plumbing piping and equipment shall withstand the effects of gravity loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.

1. Design supports for multiple pipes capable of supporting combined weight of supported systems, system contents, and test water.
2. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
3. Design seismic-restraint hangers and supports for piping and equipment.

1.3 SUBMITTALS

A. See Section 220000 “General Requirements of Plumbing and HVAC” for submittal requirements.

B. Shop Drawings: Signed and sealed by a qualified professional engineer. Show fabrication and installation details and include calculations for the following; include Product Data for components:

1. Trapeze pipe hangers.
2. Equipment supports.

C. Delegated-Design Submittal: For trapeze hangers indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 QUALITY ASSURANCE

A. Structural Steel Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Pipe Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

PART 2 - PRODUCTS

2.1 METAL PIPE HANGERS AND SUPPORTS

A. Carbon-Steel Pipe Hangers and Supports:

1. Description: MSS SP-58, Types 1 through 58, factory-fabricated components.
2. Galvanized Metallic Coatings: Pre-galvanized or hot dipped.
3. Nonmetallic Coatings: Plastic coating, jacket, or liner.
4. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion to support bearing surface of piping.
5. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel.

B. Copper Pipe Hangers:

1. Description: MSS SP-58, Types 1 through 58, copper-coated-steel, factory-fabricated components.
2. Hanger Rods: Continuous-thread rod, nuts, and washer made of carbon steel.

2.2 TRAPEZE PIPE HANGERS

A. Description: MSS SP-69, Type 59, shop- or field-fabricated pipe-support assembly made from structural carbon-steel shapes with MSS SP-58 carbon-steel hanger rods, nuts, saddles, and U-bolts.

2.3 THERMAL-HANGER SHIELD INSERTS

A. Insulation-Insert Material for Cold Piping: ASTM C 591, Type VI, Grade 1 polyisocyanurate with 125-psig minimum compressive strength and vapor barrier.

B. Insulation-Insert Material for Hot Piping: ASTM C 591, Type VI, Grade 1 polyisocyanurate with 125-psig minimum compressive strength.

C. For Trapeze or Clamped Systems: Insert and shield shall cover entire circumference of pipe.

D. For Clevis or Band Hangers: Insert and shield shall cover lower 180 degrees of pipe.

E. Insert Length: Extend 2 inches beyond sheet metal shield for piping operating below ambient air temperature.

2.4 FASTENER SYSTEMS

A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

B. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel anchors, for use in hardened portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

2.5 PIPE POSITIONING SYSTEMS

A. Description: IAPMO PS 42, positioning system of metal brackets, clips, and straps for positioning piping in pipe spaces; for plumbing fixtures in commercial applications.

2.6 EQUIPMENT SUPPORTS

A. Description: Welded, shop- or field-fabricated equipment support made from structural carbon-steel shapes.

2.7 MISCELLANEOUS MATERIALS

A. Structural Steel: ASTM A 36/A 36M, carbon-steel plates, shapes, and bars; black and galvanized.

B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.

1. Properties: Nonstaining, noncorrosive, and nongaseous.
2. Design Mix: 5000-psi, 28-day compressive strength.

PART 3 - EXECUTION

3.1 HANGER AND SUPPORT INSTALLATION

A. Metal Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from the building structure.

B. Metal Trapeze Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping, and support together on field-fabricated trapeze pipe hangers.

1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified for individual pipe hangers.
2. Field fabricate from ASTM A 36/A 36M, carbon-steel shapes selected for loads being supported. Weld steel according to AWS D1.1/D1.1M.

C. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.

D. Fastener System Installation:

1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

E. Pipe Positioning-System Installation: Install support devices to make rigid supply and waste piping connections to each plumbing fixture.

F. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.

G. Equipment Support Installation: Fabricate from welded-structural-steel shapes.

H. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.

I. Install lateral bracing with pipe hangers and supports to prevent swaying.

J. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.

K. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

L. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.

M. Insulated Piping:

1. Attach clamps and spacers to piping.

a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
c. Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.

2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.

a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.

3. Install MSS SP-58, Type 40, protective shields on cold piping with vapor barrier. Shields shall span an arc of 180 degrees.

    a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.

4. Shield Dimensions for Pipe: Not less than the following:

    a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.
    b. NPS 4: 12 inches long and 0.06 inch thick.
    c. NPS 5 and NPS 6: 18 inches long and 0.06 inch thick.
    d. NPS 8 to NPS 14: 24 inches long and 0.075 inch thick.
    e. NPS 16 to NPS 24: 24 inches long and 0.105 inch thick.

5. Pipes NPS 8 and Larger: Include wood or reinforced calcium-silicate-insulation inserts of length at least as long as protective shield.
6. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

3.2 EQUIPMENT SUPPORTS

A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.

B. Grouting: Place grout under supports for equipment and make bearing surface smooth.

C. Provide lateral bracing, to prevent swaying, for equipment supports.

3.3 METAL FABRICATIONS

A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers and equipment supports.

B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.

C. Field Welding: Comply with AWS D1.1/D1.1M procedures for shielded, metal arc welding; appearance and quality of welds; and methods used in correcting welding work; and with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Finish welds at exposed connections so no roughness shows after finishing and so contours of welded surfaces match adjacent contours.

3.4 ADJUSTING

A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

3.5 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils.

B. Touchup: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal are specified in Section 099113 "Exterior Painting.", Section 099123 "Interior Painting.", Section 099600 "High-Performance Coatings."

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

3.6 HANGER AND SUPPORT SCHEDULE

A. Specific hanger and support requirements are in Sections specifying piping systems and equipment.

B. Comply with MSS SP-69 for pipe-hanger selections and applications that are not specified in piping system Sections.

C. Use hangers and supports with galvanized metallic coatings for piping and equipment that will not have field-applied finish.

D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.

E. Use carbon-steel pipe hangers and supports and metal trapeze pipe hangers and attachments for general service applications.

F. Use copper-plated pipe hangers and copper attachments for copper piping and tubing.

G. Use padded hangers for piping that is subject to scratching.

H. Use thermal-hanger shield inserts for insulated piping and tubing.

I. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of non-insulated or insulated, stationary pipes NPS 1/2 to NPS 30.
2. Yoke-Type Pipe Clamps (MSS Type 2): For suspension of up to 1050 deg F, pipes NPS 4 to NPS 24, requiring up to 4 inches of insulation.
3. Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes NPS 3/4 to NPS 36, requiring clamp flexibility and up to 4 inches of insulation.
4. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of non-insulated, stationary pipes NPS 1/2 to NPS 8.

5. U-Bolts (MSS Type 24): For support of heavy pipes NPS 1/2 to NPS 30.
6. Pipe Saddle Supports (MSS Type 36): For support of pipes NPS 4 to NPS 36, with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate.
7. Pipe Stanchion Saddles (MSS Type 37): For support of pipes NPS 4 to NPS 36, with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate, and with U-bolt to retain pipe.
8. Single-Pipe Rolls (MSS Type 41): For suspension of pipes NPS 1 to NPS 30, from two rods if longitudinal movement caused by expansion and contraction might occur.
9. Complete Pipe Rolls (MSS Type 44): For support of pipes NPS 2 to NPS 42 if longitudinal movement caused by expansion and contraction might occur but vertical adjustment is not necessary.

J. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers NPS 3/4 to NPS 24.
2. Carbon- or Alloy-Steel Riser Clamps (MSS Type 42): For support of pipe risers NPS 3/4 to NPS 24 if longer ends are required for riser clamps.

K. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads.
2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.

L. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction, to attach to top flange of structural shape.
3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
6. C-Clamps (MSS Type 23): For structural shapes.
7. Welded-Steel Brackets: For support of pipes from below, or for suspending from above by using clip and rod. Use one of the following for indicated loads:

    a. Light (MSS Type 31): 750 lb.
    b. Medium (MSS Type 32): 1500 lb.
    c. Heavy (MSS Type 33): 3000 lb.

8. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
9. Plate Lugs (MSS Type 57): For attaching to steel beams if flexibility at beam is required.

M. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel-Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.

2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
3. Thermal-Hanger Shield Inserts: For supporting insulated pipe.

N. Spring Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Spring Cushions (MSS Type 48): For light loads if vertical movement does not exceed 1-1/4 inches.
2. Spring-Cushion Roll Hangers (MSS Type 49): For equipping Type 41, roll hanger with springs.
3. Variable-Spring Base Supports (MSS Type 52): Preset to indicated load and limit variability factor to 25 percent to allow expansion and contraction of piping system from base support.

O. Comply with MSS SP-69 for trapeze pipe-hanger selections and applications that are not specified in piping system Sections.

P. Use powder-actuated fasteners or mechanical-expansion anchors instead of building attachments where required in concrete construction.

Q. Use pipe positioning systems in pipe spaces behind plumbing fixtures to support supply and waste piping for plumbing fixtures.

END OF SECTION

PART 1 - **GENERAL**

1.1 SUMMARY

A. Section Includes:

1. Elastomeric isolation pads.
2. Elastomeric isolation mounts.
3. Restrained elastomeric isolation mounts.
4. Open-spring isolators.
5. Housed-spring isolators.
6. Restrained-spring isolators.
7. Housed-restrained-spring isolators.
8. Pipe-riser resilient supports.
9. Resilient pipe guides.
10. Elastomeric hangers.
11. Spring hangers.
12. Snubbers.
13. Restraint channel bracings.
14. Restraint cables.
15. Seismic-restraint accessories.
16. Mechanical anchor bolts.

1.2 ACTION SUBMITTALS

A. See Section 220000 “General Requirements for Plumbing and HVAC” for submittal requirements.

B. Delegated-Design Submittal: For each vibration isolation and seismic-restraint device.

1. Include design calculations and details for selecting vibration isolators and seismic restraints complying with performance requirements, design criteria, and analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.3 QUALITY ASSURANCE

A. Comply with seismic-restraint requirements in the IBC unless requirements in this Section are more stringent.

B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

C. Seismic-restraint devices shall have horizontal and vertical load testing and analysis and shall bear anchorage preapproval OPA number from OSHPD, preapproval by ICC-ES, or preapproval by another agency acceptable to authorities having jurisdiction, showing maximum seismic-restraint ratings. Ratings based on independent testing are preferred to ratings based on calculations. If preapproved ratings are unavailable, submittals based on independent testing

are preferred. Calculations (including combining shear and tensile loads) to support seismic-restraint designs must be signed and sealed by a qualified professional engineer.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Seismic-Restraint Loading:

1. Design seismic restraints for components for seismic design forces defined in Chapter 13 of ASCE 7-10.
   a. Design Spectral Response Acceleration at Short Periods, S_{DS} = 42.70%g
   b. Component Importance Factor, I_P = 1.0; except for components conveying, supporting, or otherwise containing natural gas or other flammable and/or explosive contents, I_P = 1.5.
   c. Component Response Modification Factor, R_P: See Table 13.6-1 of ASCE 7-10
   d. Component Amplification Factor, a_P: See Table 13.6-1 of ASCE 7-10

2.2 ELASTOMERIC ISOLATION PADS

A. Elastomeric Isolation Pads:
1. Fabrication: Single or multiple layers of sufficient durometer stiffness for uniform loading over pad area.
2. Size: Factory or field cut to match requirements of supported equipment.
3. Pad Material: Oil and water resistant with elastomeric properties.
4. Surface Pattern: Smooth, Ribbed or Waffle pattern.
5. Infused nonwoven cotton or synthetic fibers.
6. Load-bearing metal plates adhered to pads.

2.3 ELASTOMERIC ISOLATION MOUNTS

A. Double-Deflection, Elastomeric Isolation Mounts:
1. Mounting Plates:

   a. Top Plate: Encapsulated steel load transfer top plates, factory drilled and threaded with threaded studs or bolts.
   b. Baseplate: Encapsulated steel bottom plates with holes provided for anchoring to support structure.

2. Elastomeric Material: Molded, oil-resistant rubber, neoprene, or other elastomeric material.

2.4 RESTRAINED ELASTOMERIC ISOLATION MOUNTS

A. Restrained Elastomeric Isolation Mounts:
1. Description: All-directional isolator with seismic restraints containing two separate and opposing elastomeric elements that prevent central threaded element and attachment hardware from contacting the housing during normal operation.

a. Housing: Cast-ductile iron or welded steel.
b. Elastomeric Material: Molded, oil-resistant rubber, neoprene, or other elastomeric material.

2.5 OPEN-SPRING ISOLATORS

A. Freestanding, Laterally Stable, Open-Spring Isolators:
1. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
2. Minimum Additional Travel: 50 percent of the required deflection at rated load.
3. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
4. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
5. Baseplates: Factory-drilled steel plate for bolting to structure with an elastomeric isolator pad attached to the underside. Baseplates shall limit floor load to 500 psig (3447 kPa).
6. Top Plate and Adjustment Bolt: Threaded top plate with adjustment bolt and cap screw to fasten and level equipment.

2.6 HOUSED-SPRING ISOLATORS

A. Freestanding, Laterally Stable, Open-Spring Isolators in Two-Part Telescoping Housing:
1. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
2. Minimum Additional Travel: 50 percent of the required deflection at rated load.
3. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
4. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
5. Two-Part Telescoping Housing: A steel top and bottom frame separated by an elastomeric material and enclosing the spring isolators.

a. Drilled base housing for bolting to structure with an elastomeric isolator pad attached to the underside. Bases shall limit floor load to 500 psig.
b. Top housing with attachment and leveling bolt.

2.7 RESTRAINED-SPRING ISOLATORS

A. Freestanding, Laterally Stable, Open-Spring Isolators with Vertical-Limit Stop Restraint:
1. Housing: Steel housing with vertical-limit stops to prevent spring extension due to weight being removed.

a. Base with holes for bolting to structure with an elastomeric isolator pad attached to the underside. Bases shall limit floor load to 500 psig.
b. Top plate with threaded mounting holes.
c. Internal leveling bolt that acts as blocking during installation.

2. Restraint: Limit stop as required for equipment and authorities having jurisdiction.
3. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
4. Minimum Additional Travel: 50 percent of the required deflection at rated load.
5. Lateral Stiffness: More than 80 percent of rated vertical stiffness.

6. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.

2.8 HOUSED-RESTRAINED-SPRING ISOLATORS

A. Freestanding, Steel, Open-Spring Isolators with Vertical-Limit Stop Restraint in Two-Part Telescoping Housing:
   1. Two-Part Telescoping Housing: A steel top and bottom frame separated by an elastomeric material and enclosing the spring isolators. Housings are equipped with adjustable snubbers to limit vertical movement.
      a. Drilled base housing for bolting to structure with an elastomeric isolator pad attached to the underside. Bases shall limit floor load to 500 psig.
      b. Threaded top housing with adjustment bolt and cap screw to fasten and level equipment.
   2. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
   3. Minimum Additional Travel: 50 percent of the required deflection at rated load.
   4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
   5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.

2.9 PIPE-RISER RESILIENT SUPPORT

A. Description: All-directional, acoustical pipe anchor consisting of two steel tubes separated by a minimum 1/2-inch- thick neoprene.
   1. Vertical-Limit Stops: Steel and neoprene vertical-limit stops arranged to prevent vertical travel in both directions.
   2. Maximum Load Per Support: 500 psig on isolation material providing equal isolation in all directions.

2.10 RESILIENT PIPE GUIDES

A. Description: Telescopic arrangement of two steel tubes or post and sleeve arrangement separated by a minimum 1/2-inch- thick neoprene.
   1. Factory-Set Height Guide with Shear Pin: Shear pin shall be removable and reinsertable to allow for selection of pipe movement. Guides shall be capable of motion to meet location requirements.

2.11 ELASTOMERIC HANGERS

A. Elastomeric Mount in a Steel Frame with Upper and Lower Steel Hanger Rods:
   1. Frame: Steel, fabricated with a connection for an upper threaded hanger rod and an opening on the underside to allow for a maximum of 30 degrees of angular lower hanger-rod misalignment without binding or reducing isolation efficiency.

2. Dampening Element: Molded, oil-resistant rubber, neoprene, or other elastomeric material with a projecting bushing for the underside opening preventing steel to steel contact.

2.12 SPRING HANGERS

A. Combination Coil-Spring and Elastomeric-Insert Hanger with Spring and Insert in Compression:
1. Frame: Steel, fabricated for connection to threaded hanger rods and to allow for a maximum of 30 degrees of angular hanger-rod misalignment without binding or reducing isolation efficiency.
2. Outside Spring Diameter: Not less than 80 percent of the compressed height of the spring at rated load.
3. Minimum Additional Travel: 50 percent of the required deflection at rated load.
4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
6. Elastomeric Element: Molded, oil-resistant rubber or neoprene. Steel-washer-reinforced cup to support spring and bushing projecting through bottom of frame.
7. Adjustable Vertical Stop: Steel washer with neoprene washer "up-stop" on lower threaded rod.
8. Self-centering hanger-rod cap to ensure concentricity between hanger rod and support spring coil.

2.13 SNUBBERS

A. Description: Factory fabricated using welded structural-steel shapes and plates, anchor bolts, and replaceable resilient isolation washers and bushings.

1. Anchor bolts for attaching to concrete shall be seismic-rated, drill-in, and stud-wedge or female-wedge type.
2. Resilient Isolation Washers and Bushings: Oil- and water-resistant neoprene.
3. Maximum 1/4-inch air gap, and minimum 1/4-inch- thick resilient cushion.

2.14 RESTRAINT CHANNEL BRACINGS

A. Description: MFMA-4, shop- or field-fabricated bracing assembly made of slotted steel channels with accessories for attachment to braced component at one end and to building structure at the other end and other matching components and with corrosion-resistant coating; rated in tension, compression, and torsion forces.

2.15 RESTRAINT CABLES

A. Restraint Cables: ASTM A 603 galvanized-steel cables. End connections made of steel assemblies with thimbles, brackets, swivel, and bolts designed for restraining cable service; with a minimum of two clamping bolts for cable engagement.

2.16 SEISMIC-RESTRAINT ACCESSORIES

A. Hanger-Rod Stiffener: Reinforcing steel angle clamped to hanger rod.

B. Bushings for Floor-Mounted Equipment Anchor Bolts: Neoprene bushings designed for rigid equipment mountings, and matched to type and size of anchor bolts and studs.

C. Bushing Assemblies for Wall-Mounted Equipment Anchorage: Assemblies of neoprene elements and steel sleeves designed for rigid equipment mountings, and matched to type and size of attachment devices used.

D. Resilient Isolation Washers and Bushings: One-piece, molded, oil- and water-resistant neoprene, with a flat washer face.

E. Mechanical Anchor Bolts: Drilled-in and stud-wedge or female-wedge type in zinc-coated steel for interior applications and stainless steel for exterior applications. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488.

PART 3 - EXECUTION

3.1 APPLICATIONS

A. Multiple Pipe Supports: Secure pipes to trapeze member with clamps approved for application by an evaluation service member of ICC-ES.

B. Hanger-Rod Stiffeners: Install hanger-rod stiffeners where indicated or scheduled on Drawings to receive them and where required to prevent buckling of hanger rods due to seismic forces.

C. Strength of Support and Seismic-Restraint Assemblies: Where not indicated, select sizes of components so strength is adequate to carry present and future static and seismic loads within specified loading limits.

3.2 VIBRATION CONTROL AND SEISMIC-RESTRAINT DEVICE INSTALLATION

A. Coordinate the location of embedded connection hardware with supported equipment attachment and mounting points and with requirements for concrete reinforcement and formwork specified in Section 033000 "Cast-in-Place Concrete." or Section 033053 "Miscellaneous Cast-in-Place Concrete."

B. Installation of vibration isolators must not cause any change of position of equipment, piping, or ductwork resulting in stresses or misalignment.

C. Comply with requirements in Section 077200 "Roof Accessories" for installation of roof curbs, equipment supports, and roof penetrations.

D. Equipment Restraints:

1. Install seismic snubbers on plumbing equipment mounted on vibration isolators. Locate snubbers as close as possible to vibration isolators and bolt to equipment base and supporting structure.

2. Install resilient bolt isolation washers on equipment anchor bolts where clearance between anchor and adjacent surface exceeds 0.125 inch.
3. Install seismic-restraint devices using methods approved by an evaluation service member of ICC-ES that provides required submittals for component.

E. Piping Restraints:

1. Comply with requirements in MSS SP-127.
2. Space lateral supports a maximum of 40 feet o.c., and longitudinal supports a maximum of 80 feet o.c.
3. Brace a change of direction longer than 12 feet.

F. Install cables so they do not bend across edges of adjacent equipment or building structure.

G. Install seismic-restraint devices using methods approved by an evaluation service member of ICC-ES that provides required submittals for component.

H. Install bushing assemblies for anchor bolts for floor-mounted equipment, arranged to provide resilient media between anchor bolt and mounting hole in concrete base.

I. Install bushing assemblies for mounting bolts for wall-mounted equipment, arranged to provide resilient media where equipment or equipment-mounting channels are attached to wall.

J. Attachment to Structure: If specific attachment is not indicated, anchor bracing to structure at flanges of beams, at upper truss chords of bar joists, or at concrete members.

K. Drilled-in Anchors:

1. Identify position of reinforcing steel and other embedded items prior to drilling holes for anchors. Do not damage existing reinforcing or embedded items during coring or drilling. Notify the structural engineer if reinforcing steel or other embedded items are encountered during drilling. Locate and avoid prestressed tendons, electrical and telecommunications conduit, and gas lines.
2. Do not drill holes in concrete or masonry until concrete, mortar, or grout has achieved full design strength.
3. Wedge Anchors: Protect threads from damage during anchor installation. Heavy-duty sleeve anchors shall be installed with sleeve fully engaged in the structural element to which anchor is to be fastened.
4. Set anchors to manufacturer's recommended torque, using a torque wrench.
5. Install zinc-coated steel anchors for interior and stainless-steel anchors for exterior applications.

3.3 ACCOMMODATION OF DIFFERENTIAL SEISMIC MOTION

A. Install flexible connections in piping where they cross seismic joints, where adjacent sections or branches are supported by different structural elements, and where the connections terminate with connection to equipment that is anchored to a different structural element from the one supporting the connections as they approach equipment. Comply with requirements in Section 221116 "Domestic Water Piping" for piping flexible connections.

3.4 ADJUSTING

A. Adjust isolators after piping system is at operating weight.

B. Adjust limit stops on restrained-spring isolators to mount equipment at normal operating height. After equipment installation is complete, adjust limit stops so they are out of contact during normal operation.

END OF SECTION

PART 1 - **GENERAL**

1.1 SUMMARY

A. Section Includes:

1. Equipment labels.
2. Warning signs and labels.
3. Pipe labels.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Plastic Labels for Equipment:
1. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.
2. Letter Color: White
3. Background Color: Black
4. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
5. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
6. Minimum Letter Size: 1/4 inch For name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-quarters the size of principal lettering.
7. Fasteners: Stainless-steel rivets or self-tapping screws.
8. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

B. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), and the Specification Section number and title where equipment is specified.

2.2 WARNING SIGNS AND LABELS

A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/8 inch thick, and having predrilled holes for attachment hardware.

B. Letter Color: White

C. Background Color: Red

D. Maximum Temperature: Able to withstand temperatures up to 160 deg F.

E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.

F. Minimum Letter Size: 1/4 inch (6.4 mm) for name of units if viewing distance is less than 24 inches (600 mm), 1/2 inch (13 mm) for viewing distances up to 72 inches (1830 mm), and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-quarters the size of principal lettering.

G. Fasteners: Stainless-steel rivets or self-tapping screws.

H. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

I. Label Content: Include caution and warning information plus emergency notification instructions.

2.3 PIPE LABELS

A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.

B. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.

C. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings; also include pipe size and an arrow indicating flow direction.

1. Flow-Direction Arrows: Integral with piping-system service lettering to accommodate both directions or as separate unit on each pipe label to indicate flow direction.
2. Lettering Size: At least 1/2 inch for viewing distances up to 72 inches and proportionately larger lettering for greater viewing distances.

PART 3 - EXECUTION

3.1 EQUIPMENT LABEL INSTALLATION

A. Install or permanently fasten labels on each major item of mechanical equipment.

B. Locate equipment labels where accessible and visible.

3.2 PIPE LABEL INSTALLATION

A. Pipe Label Locations: Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:

1. Near each valve and control device.
2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
3. Near penetrations and on both sides of through walls, floors, ceilings, and inaccessible enclosures.

4. At access doors, manholes, and similar access points that permit view of concealed piping.
5. Near major equipment items and other points of origination and termination.
6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.

B. Pipe Label Color Schedule:

1. Compressed Air Piping:
   a. Background: Blue
   b. Letter Colors: White

2. Natural Gas Piping:
   a. Background: Yellow
   b. Letters: Black:

3. Domestic Water Piping:
   a. Background: Green
   b. Letter Colors: White

4. Sanitary Waste and Storm Drainage Piping:
   a. Background Color: Black
   b. Letter Color: White

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

A. Section includes insulating requirements for equipment, piping:

1.2 SUBMITTALS

A. See section 220000 “General Requirements of Plumbing and HVAC” for submittal requirements.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.

B. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84 by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.

1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. Comply with requirements in "Equipment Insulation Schedule" "Piping Insulation Schedule," and “Duct Insulation Schedule" articles for where insulating materials shall be applied.

B. Products shall not contain asbestos, lead, mercury, or mercury compounds.

C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

E. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.

F. Flexible Elastomeric Insulation: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials and Type II for sheet materials.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Aeroflex USA, Inc.
    b. Armacell LLC.
    c. K-Flex USA.

G. Mineral-Fiber, Pipe and Tank Insulation: Mineral or glass fibers bonded with a thermosetting resin. Semirigid board material with factory-applied ASJ complying with ASTM C 1393, Type II or Type IIIA Category 2, or with properties similar to ASTM C 612, Type IB. Nominal density is 2.5 lb/cu. ft. or more. Thermal conductivity (k-value) at 100 deg F is 0.29 Btu x in./h x sq. ft. x deg F or less. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. CertainTeed Corporation.
    b. Johns Manville; a Berkshire Hathaway company.
    c. Knauf Insulation.
    d. Owens Corning.

H. Mineral-Fiber, Preformed Pipe Insulation:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Johns Manville; a Berkshire Hathaway company.
    b. Knauf Insulation.
    c. Owens Corning.

2. Type I, 850 Deg F Materials: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 547, Type I, Grade A, with factory-applied ASJ-SSL. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

I. Thermal Insulating Wool:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    a. Owens Corning
    b. Prior Approved Equal

2. Type I, 1000 Deg F Materials: Inorganic glass fibers bonded with thermosetting resin. Comply with ASTM C553, TIW Type I.

2.2 INSULATING CEMENTS

A. Mineral-Fiber, Hydraulic-Setting Insulating and Finishing Cement: Comply with ASTM C 449.

2.3 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.

B. Flexible Elastomeric and Polyolefin Adhesive: Comply with MIL-A-24179A, Type II, Class I.

C. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.

D. ASJ Adhesive, and FSK and PVDC Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.

E. PVC Jacket Adhesive: Compatible with PVC jacket.

2.4 MASTICS

A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-PRF-19565C, Type II.

B. Vapor-Barrier Mastic: Water based; suitable for indoor use on below ambient services.
1. Water-Vapor Permeance: ASTM E 96/E 96M, Procedure B, 0.013 perm at 43-mil dry film thickness.
2. Service Temperature Range: Minus 20 to plus 180 deg F.
3. Solids Content: ASTM D 1644, 58 percent by volume and 70 percent by weight.
4. Color: White.

C. Breather Mastic: Water based; suitable for indoor and outdoor use on above ambient services.
1. Water-Vapor Permeance: ASTM F 1249, 1.8 perms at 0.0625-inch dry film thickness.
2. Service Temperature Range: Minus 20 to plus 180 deg F.
3. Solids Content: 60 percent by volume and 66 percent by weight.
4. Color: White.

2.5 SEALANTS

A. Metal Jacket Flashing Sealants:
1. Materials shall be compatible with insulation materials, jackets, and substrates.
2. Fire- and water-resistant, flexible, elastomeric sealant.
3. Service Temperature Range: Minus 40 to plus 250 deg F.
4. Color: Aluminum.

B. ASJ Flashing Sealants, and PVC Jacket Flashing Sealants:
1. Materials shall be compatible with insulation materials, jackets, and substrates.
2. Fire- and water-resistant, flexible, elastomeric sealant.
3. Service Temperature Range: Minus 40 to plus 250 deg F.
4. Color: White.

2.6 FACTORY-APPLIED JACKETS

A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:

1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C 1136, Type I.
2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C 1136, Type I.

2.7 FIELD-APPLIED JACKETS

A. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.

B. PVC Jacket: High-impact-resistant, UV-resistant PVC complying with ASTM D 1784, Class 16354-C; thickness as scheduled; roll stock ready for shop or field cutting and forming. Thickness is indicated in field-applied jacket schedules.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Johns Manville; a Berkshire Hathaway company.
b. P.I.C. Plastics, Inc.
c. Proto Corporation.
d. Speedline Corporation.

2. Adhesive: As recommended by jacket material manufacturer.
3. Color: White.
4. Factory-fabricated fitting covers to match jacket if available; otherwise, field fabricate.

a. Shapes: 45- and 90-degree, short- and long-radius elbows, tees, valves, flanges, unions, reducers, end caps, soil-pipe hubs, traps, mechanical joints, and P-trap and supply covers for lavatories.

C. Aluminum Jacket: Comply with ASTM B 209, Alloy 3003, 3005, 3105, or 5005, Temper H-14.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Childers Brand; H. B. Fuller Construction Products.
b. ITW Insulation Systems; Illinois Tool Works, Inc.
c. RPR Products, Inc.

2. Sheet and roll stock ready for shop or field sizing or factory cut and rolled to size.

3. Finish and thickness are indicated in field-applied jacket schedules.
4. Moisture Barrier for Outdoor Applications: 3-mil-thick, heat-bonded polyethylene and kraft paper or 2.5-mil-thick polysurlyn.
5. Factory-Fabricated Fitting Covers:

a. Same material, finish, and thickness as jacket.
b. Preformed 2-piece or gore, 45- and 90-degree, short- and long-radius elbows.
c. Tee covers.
d. Flange and union covers.
e. End caps.
f. Beveled collars.
g. Valve covers.
h. Field fabricate fitting covers only if factory-fabricated fitting covers are not available.

D. Underground Direct-Buried Jacket: 125-mil-thick vapor barrier and waterproofing membrane consisting of a rubberized bituminous resin reinforced with a woven-glass fiber or polyester scrim and laminated aluminum foil.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Pittsburgh Corning Corporation.
b. Polyguard Products, Inc.

2.8 TAPES

A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.
1. Width: 3 inches.
2. Thickness: 11.5 mils.
3. Adhesion: 90 ounces force/inch in width.
4. Elongation: 2 percent.
5. Tensile Strength: 40 lbf/inch in width.
6. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.

B. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive; suitable for indoor and outdoor applications.
1. Width: 2 inches.
2. Thickness: 6 mils.
3. Adhesion: 64 ounces force/inch in width.
4. Elongation: 500 percent.
5. Tensile Strength: 18 lbf/inch in width.

C. Aluminum-Foil Tape: Vapor-retarder tape with acrylic adhesive.
1. Width: 2 inches.
2. Thickness: 3.7 mils.
3. Adhesion: 100 ounces force/inch in width.
4. Elongation: 5 percent.
5. Tensile Strength: 34 lbf/inch in width.

2.9 SECUREMENTS

A. Aluminum Bands: ASTM B 209, Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, 1/2 inch wide with wing seal or closed seal.

B. Insulation Pins and Hangers:

1. Metal, Adhesively Attached, Perforated-Base Insulation Hangers: Baseplate welded to projecting spindle that is capable of holding insulation, of thickness indicated, securely in position indicated when self-locking washer is in place.
a. Baseplate: Perforated, galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square.
b. Spindle: Copper- or zinc-coated, low-carbon steel, fully annealed, 0.106-inch-diameter shank, length to suit depth of insulation indicated.
c. Adhesive: Recommended by hanger manufacturer. Product with demonstrated capability to bond insulation hanger securely to substrates indicated without damaging insulation, hangers, and substrates.

2. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch-thick, galvanized-steel sheet, with beveled edge sized as required to hold insulation securely in place but not less than 1-1/2 inches in diameter.
   a. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in exposed locations.

C. Staples: Outward-clinching insulation staples, nominal 3/4-inch-wide, stainless steel or Monel.

D. Wire: 0.062-inch soft-annealed, stainless steel.

2.10 CORNER ANGLES

A. PVC Corner Angles: 30 mils thick, minimum 1 by 1 inch, PVC according to ASTM D 1784, Class 16354-C. White or color-coded to match adjacent surface.

B. Aluminum Corner Angles: 0.040 inch thick, minimum 1 by 1 inch, aluminum according to ASTM B 209, Alloy 3003, 3005, 3105, or 5005; Temper H-14.

2.11 PROTECTIVE SHIELDING GUARDS

A. Protective Shielding Pipe Covers:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Plumberex Specialty Products, Inc.
   b. Truebro.
   c. Zurn Industries, LLC.

2. Description: Manufactured plastic wraps for covering plumbing fixture hot- and cold-water supplies and trap and drain piping. Comply with Americans with Disabilities Act (ADA) requirements.

B. Protective Shielding Piping Enclosures:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Truebro.
   b. Zurn Industries, LLC.

2. Description: Manufactured plastic enclosure for covering plumbing fixture hot- and cold-water supplies and trap and drain piping. Comply with ADA requirements.

PART 3 - EXECUTION

3.1 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

B. Coordinate insulation installation with the trade installing heat tracing. Comply with requirements for heat tracing that apply to insulation.

C. Mix insulating cements with clean potable water; if insulating cements are to be in contact with stainless-steel surfaces, use demineralized water.

3.2 GENERAL INSTALLATION REQUIREMENTS

A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of equipment.

B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item as specified in insulation schedules.

C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

D. Install insulation with longitudinal seams at top and bottom of horizontal runs.

E. Install multiple layers of insulation with longitudinal and end seams staggered.

F. Do not weld brackets, clips, or other attachment devices to piping, fittings, and specialties.

G. Keep insulation materials dry during application and finishing.

H. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.

I. Install insulation with least number of joints practical.

J. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.

1. Install insulation continuously through hangers and around anchor attachments.
2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.
4. Cover inserts with jacket material matching adjacent pipe insulation. Install shields over jacket, arranged to protect jacket from tear or puncture by hanger, support, and shield.

K. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.

L. Install insulation with factory-applied jackets as follows:

1. Draw jacket tight and smooth.
2. Cover circumferential joints with 3-inch-wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.

3. Overlap jacket longitudinal seams at least 1-1/2 inches. Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 2 inches o.c.

    a. For below ambient services, apply vapor-barrier mastic over staples.

4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints.

M. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.

N. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

O. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

P. For above ambient services, do not install insulation to the following:

1. Vibration-control devices.
2. Testing agency labels and stamps.
3. Nameplates and data plates.
4. Manholes.
5. Handholes.
6. Cleanouts.

Q. Insulate instrument connections for thermometers, pressure gages, pressure temperature taps, test connections, flow meters, sensors, switches, and transmitters on insulated pipes. Shape insulation at these connections by tapering it to and around the connection with insulating cement and finish with finishing cement, mastic, and flashing sealant.

3.3 PENETRATIONS

A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches (50 mm) below top of roof flashing.
4. Seal jacket to roof flashing with flashing sealant.

B. Insulation Installation at Underground Exterior Wall Penetrations: Terminate insulation flush with sleeve seal. Seal terminations with flashing sealant.

C. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
4. Seal jacket to wall flashing with flashing sealant.

D. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.

E. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Install insulation continuously through penetrations of fire-rated walls and partitions.

1. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping and fire-resistive joint sealers.

F. Insulation Installation at Floor Penetrations:

1. Pipe: Install insulation continuously through floor penetrations.
2. Seal penetrations through fire-rated assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

3.4 INSTALLATION OF EQUIPMENT, TANK, AND VESSEL INSULATION

A. Mineral-Fiber, Pipe, and Tank Insulation Installation for Tanks and Vessels: Secure insulation with adhesive and anchor pins and speed washers.

1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 100 percent coverage of tank and vessel surfaces.
2. Groove and score insulation materials to fit as closely as possible to equipment, including contours. Bevel insulation edges for cylindrical surfaces for tight joints. Stagger end joints.
3. Protect exposed corners with secured corner angles.
4. Install adhesively attached or self-sticking insulation hangers and speed washers on sides of tanks and vessels as follows:

    a. Do not weld anchor pins to ASME-labeled pressure vessels.
    b. Select insulation hangers and adhesive that are compatible with service temperature and with substrate.
    c. On tanks and vessels, maximum anchor-pin spacing is 3 inches from insulation end joints, and 16 inches o.c. in both directions.
    d. Do not over compress insulation during installation.
    e. Cut and miter insulation segments to fit curved sides and domed heads of tanks and vessels.
    f. Impale insulation over anchor pins and attach speed washers.
    g. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.

5. Secure each layer of insulation with stainless-steel or aluminum bands. Select band material compatible with insulation materials.

6. Where insulation hangers on equipment and vessels are not permitted or practical and where insulation support rings are not provided, install a girdle network for securing insulation. Stretch pre-stressed aircraft cable around the diameter of vessel and make taut with clamps, turnbuckles, or breather springs. Place one circumferential girdle around equipment approximately 6 inches from each end. Install wire or cable between two circumferential girdles 12 inches o.c. Install a wire ring around each end and around outer periphery of center openings, and stretch pre-stressed aircraft cable radially from the wire ring to nearest circumferential girdle. Install additional circumferential girdles along the body of equipment or tank at a minimum spacing of 48 inches o.c. Use this network for securing insulation with tie wire or bands.
7. Stagger joints between insulation layers at least 3 inches.
8. Install insulation in removable segments on equipment access doors, manholes, handholes, and other elements that require frequent removal for service and inspection.
9. Bevel and seal insulation ends around manholes, handholes, ASME stamps, and nameplates.
10. For equipment with surface temperatures below ambient, apply mastic to open ends, joints, seams, breaks, and punctures in insulation.

B. Flexible Elastomeric Thermal Insulation Installation for Tanks and Vessels: Install insulation over entire surface of tanks and vessels.

1. Apply 100 percent coverage of adhesive to surface with manufacturer's recommended adhesive.
2. Seal longitudinal seams and end joints.

C. Insulation Installation on Pumps:

1. Fabricate metal boxes lined with insulation. Fit boxes around pumps and coincide box joints with splits in pump casings. Fabricate joints with outward bolted flanges. Bolt flanges on 6-inchcenters, starting at corners. Install 3/8-inch-diameter fasteners with wing nuts. Alternatively, secure the box sections together using a latching mechanism.
2. Fabricate boxes from galvanized steel, at least 0.050 inch thick.
3. For below ambient services, install a vapor barrier at seams, joints, and penetrations. Seal between flanges with replaceable gasket material to form a vapor barrier.

3.5 INSTALLATION OF FLEXIBLE ELASTOMERIC INSULATION

A. Seal longitudinal seams and end joints with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

B. Insulation Installation on Pipe Flanges:

1. Install pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with cut sections of sheet insulation of same thickness as pipe insulation.
4. Secure insulation to flanges and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

C. Insulation Installation on Pipe Fittings and Elbows:

1. Install mitered sections of pipe insulation.

2. Secure insulation materials and seal seams with manufacturer's recommended adhesive to eliminate openings in insulation that allow passage of air to surface being insulated.

3.6 INSTALLATION OF MINERAL-FIBER PREFORMED PIPE INSULATION

A. Insulation Installation on Straight Pipes and Tubes:

1. Secure each layer of preformed pipe insulation to pipe with wire or bands and tighten bands without deforming insulation materials.
2. Where vapor barriers are indicated, seal longitudinal seams, end joints, and protrusions with vapor-barrier mastic and joint sealant.
3. For insulation with factory-applied jackets on above-ambient surfaces, secure laps with outward clinched staples at 6 inches o.c.
4. For insulation with factory-applied jackets on below-ambient surfaces, do not staple longitudinal tabs. Instead, secure tabs with additional adhesive as recommended by insulation material manufacturer and seal with vapor-barrier mastic and flashing sealant.

B. Insulation Installation on Pipe Flanges:

1. Install preformed pipe insulation to outer diameter of pipe flange.
2. Make width of insulation section same as overall width of flange and bolts, plus twice the thickness of pipe insulation.
3. Fill voids between inner circumference of flange insulation and outer circumference of adjacent straight pipe segments with mineral-fiber blanket insulation.
4. Install jacket material with manufacturer's recommended adhesive, overlap seams at least 1 inch, and seal joints with flashing sealant.

C. Insulation Installation on Fittings, Joints and Couplings:

1. All piping fittings shall be insulated by filling the total void over all fittings between straight runs of pipe insulation with thermal insulating wool, forming a uniform insulation thickness equal to, or exceeding, the adjacent pipe insulation.
2. Finish all insulated pipe fittings by applying PVC fitting covers overlapping the adjacent pipe insulation outer covering.
3. For hot service piping (105F and above), secure the PVC fitting covers stainless steel tack fasteners.
4. For cold service piping (60F and below), seal the ends of the adjacent pipe insulation with vapor barrier mastic, ensure that the PVC fitting cover overlaps the adjacent pipe insulation jacket by 2” minimum and secure PVC fitting covers to adjacent pipe insulation with 2” wide PVC Tape.
5. Fitting covers for grooved piping systems shall be the type specifically manufactured for grooved piping systems.

3.7 INSULATION INSTALLATION ON VALVES AND PIPE SPECIALTIES

A. Install removable insulation covers on all valves and specialties 1-1/2” and larger.

1. Valves, Strainers, and Unions 1-1/2 – 2 NPS: “No Sweat” re-usable valve covers or approved equal product.
2. Valves, Strainers and Unions 2-1/2” and larger use removable insulation jackets from Thermaxx or prior approved manufacturer.

3.8 FIELD-APPLIED JACKET INSTALLATION

A. Where PVC jackets are indicated, install with 1-inch overlap at longitudinal seams and end joints. Seal with manufacturer's recommended adhesive.

1. Apply two continuous beads of adhesive to seams and joints, one bead under lap and the finish bead along seam and joint edge.

B. Where metal jackets are indicated, install with 2-inch overlap at longitudinal seams and end joints. Overlap longitudinal seams arranged to shed water. Seal end joints with weatherproof sealant recommended by insulation manufacturer. Secure jacket with stainless-steel bands 12 inches o.c. and at end joints.

C. Where underground direct-buried jacket are indicated, install per the manufacturers instructions.

3.9 FINISHES

A. Insulation with ASJ or Other Paintable Jacket Material and where Required: Paint jacket with paint system identified below and as specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

1. Flat Acrylic Finish: Two finish coats over a primer that is compatible with jacket material and finish coat paint. Add fungicidal agent to render fabric mildew proof.

a. Finish Coat Material: Interior, flat, latex-emulsion size.

B. Flexible Elastomeric Thermal Insulation: After adhesive has fully cured, apply two coats of insulation manufacturer's recommended protective coating.

C. Do not field paint aluminum or PVC jacketing.

3.10 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Tests and Inspections:

1. Inspect field-insulated equipment, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to one location(s) for each type of equipment defined in the "Equipment Insulation Schedule" Article. For large equipment, remove only a portion adequate to determine compliance.

C. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.11 EQUIPMENT INSULATION SCHEDULE

A. Insulation materials and thicknesses for Plumbing and HVAC equipment are identified in the table below. If more than one material is listed for a type of equipment, selection from materials listed is Contractor's option.

Equipment Type	System Temp	Insulation Type	Insulation Conductivity (Btu x in) / (hr x ft^2 x F)	Insulation Thickness (in)	Vapor Barrier	Factory Installed Jacket Type
Tanks	Below 60F and above 105F	Glass Fiber or Flexible Elastomeric	0.27	2	Cold Service >60F only	ASJ

3.12 PIPING INSULATION SCHEDULE

A. Insulation materials and thicknesses for Plumbing and HVAC piping are identified in the table below. If more than one material is listed for an application, selection from materials listed is at the Contractor's option.

Application	Nominal Pipe Size	Insulation Type	Insulation Conductivity (Btu x in) / (hr x ft^2 x F)	Insulation Thickness (in)	Vapor Barrier	Factory Installed Jacket Type
Domestic Cold Water Piping	All	Glass Fiber or Flexible Elastomeric	0.27	1	Yes	ASJ
Domestic Hot Water and Recirc.	All	Glass Fiber or Flexible Elastomeric	0.27	1	No	ASJ
Plumbing Vents within 6ft of roof termination	All	Glass Fiber or Flexible Elastomeric	0.27	1	Yes	ASJ
Refrigerati-on Piping (Cooling Only)	All	Flexible Elastomeric	0.27	3/4	No	None
Refrigerati-on Piping (VRF or Heat Pump)	All	Flexible Elastomeric	0.27	1	No	None

3.13 FIELD APPLIED JACKETING SCHEDULE

A. Field applied jackets for Plumbing and HVAC piping are identified in the table below. If more than one material is listed for an application, selection from materials listed is at the Contractor's option.

Application	Installation Location	Filed Applied Jacketing

Domestic Water Piping	Indoors	PVC when piping is exposed and within 7ft of the floor.
Domestic Water Piping	Outdoors	Aluminum Jacket

END OF SECTION 220716

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Copper tube and fittings.
2. PEX tube and fittings.
3. Piping joining materials.
4. Transition fittings.

B. Related Requirements:

1. Section 220500 “General Provisions of Plumbing and HVAC”

1.2 ACTION SUBMITTALS

A. See Section 220000 “General Requirement of Plumbing and HVAC” for submittal requirements.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

B. Potable-water piping and components shall comply with NSF 14 and NSF 61 Annex G. and Plastic piping components shall be marked with "NSF-pw."

C. Comply with NSF Standard 372 for low lead.

2.2 COPPER TUBE AND FITTINGS

A. Hard Copper Tube: ASTM B 88, Type L water tube, drawn temper.

B. Soft Copper Tube: ASTM B 88, Type K water tube, annealed temper.

C. Cast-Copper, Solder-Joint Fittings: ASME B16.18, pressure fittings.

D. Wrought-Copper, Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.

E. Copper Unions:

1. MSS SP-123.
2. Cast-copper-alloy, hexagonal-stock body.
3. Ball-and-socket, metal-to-metal seating surfaces.
4. Solder-joint or threaded ends.

F. Copper Pressure-Seal-Joint Fittings:

1. Fittings for NPS 2 and Smaller: Wrought-copper fitting with EPDM-rubber, O-ring seal in each end.
2. Fittings for NPS 2-1/2 to NPS 4: Cast-bronze or wrought-copper fitting with EPDM-rubber, O-ring seal in each end.

2.3 PEX TUBE AND FITTINGS

A. Tube Material: PEX plastic according to ASTM F 876 and ASTM F 877.

B. Fittings: ASTM F 1960, cold expansion fittings and reinforcing rings.

C. Manifold: Multiple-outlet, plastic or corrosion-resistant-metal assembly complying with ASTM F 876; with plastic or corrosion-resistant-metal valve for each outlet.

2.4 PIPING JOINING MATERIALS

A. Pipe-Flange Gasket Materials:

1. AWWA C110/A21.10, rubber, flat face, 1/8 inch thick or ASME B16.21, nonmetallic and asbestos free unless otherwise indicated.
2. Full-face or ring type unless otherwise indicated.

B. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.

C. Solder Filler Metals: ASTM B 32, lead-free alloys.

D. Flux: ASTM B 813, water flushable.

E. Brazing Filler Metals: AWS A5.8M/A5.8, BCuP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.

2.5 TRANSITION FITTINGS

A. General Requirements:

1. Same size as pipes to be joined.
2. Pressure rating at least equal to pipes to be joined.
3. End connections compatible with pipes to be joined.

B. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.

PART 3 - **EXECUTION**

3.1 EARTHWORK

A. Comply with requirements in Section 312000 "Earth Moving" for excavating, trenching, and backfilling.

3.2 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of domestic water piping. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install copper tubing under building slab according to CDA's "Copper Tube Handbook."

C. Install shutoff valve, hose-end drain valve, strainer, pressure gage, and test tee with valve inside the building at each domestic water-service entrance. Comply with requirements for pressure gages in Section 220519 "Meters and Gages for Plumbing Piping" and with requirements for drain valves and strainers in Section 221119 "Domestic Water Piping Specialties."

D. Install water-pressure-reducing valves downstream from shutoff valves. Comply with requirements for pressure-reducing valves in Section 221119 "Domestic Water Piping Specialties."

E. Install domestic water piping level and plumb.

F. Rough-in domestic water piping for water-meter installation according to utility company's requirements.

G. Install seismic restraints on piping. Comply with requirements for seismic-restraint devices in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."

H. Install piping concealed from view and protected from physical contact by building occupants unless otherwise indicated and except in equipment rooms and service areas.

I. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

J. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal, and coordinate with other services occupying that space.

K. Install piping to permit valve servicing.

L. Install nipples, unions, special fittings, and valves with pressure ratings the same as or higher than the system pressure rating used in applications below unless otherwise indicated.

M. Install piping free of sags and bends.

N. Install fittings for changes in direction and branch connections.

O. Install PEX tubing with loop at each change of direction of more than 90 degrees.

P. Install unions in copper tubing at final connection to each piece of equipment, machine, and specialty.

Q. Install pressure gages on suction and discharge piping for each plumbing pump and packaged booster pump. Comply with requirements for pressure gages in Section 220519 "Meters and Gages for Plumbing Piping."

R. Install thermometers on inlet and outlet piping from each water heater. Comply with requirements for thermometers in Section 220519 "Meters and Gages for Plumbing and HVAC Piping."

S. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 220500 "General Provisions of Plumbing and HVAC."

T. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 220500 "General Provisions of Plumbing and HVAC."

U. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 220500 "General Provisions of Plumbing and HVAC."

3.3 JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

B. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.

C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.

D. Brazed Joints for Copper Tubing: Comply with CDA's "Copper Tube Handbook," "Brazed Joints" chapter.

E. Soldered Joints for Copper Tubing: Apply ASTM B 813, water-flushable flux to end of tube. Join copper tube and fittings according to ASTM B 828 or CDA's "Copper Tube Handbook."

F. Flanged Joints: Select appropriate asbestos-free, nonmetallic gasket material in size, type, and thickness suitable for domestic water service. Join flanges with gasket and bolts according to ASME B31.9.

G. Joints for PEX Tubing: Join according to ASTM F 1960 for cold expansion fittings and reinforcing rings.

H. Joints for PEX Tubing: Join according to ASSE 1061 for push-fit fittings.

I. Joints for Dissimilar-Material Piping: Make joints using adapters compatible with materials of both piping systems.

3.4 TRANSITION FITTING INSTALLATION

A. Install transition couplings at joints of dissimilar piping.

B. Transition Fittings in Underground Domestic Water Piping:

1. Fittings for NPS 1-1/2 and Smaller: Fitting-type coupling.
2. Fittings for NPS 2 and Larger: Sleeve-type coupling.

C. Transition Fittings in Aboveground Domestic Water Piping NPS 2 and Smaller: Plastic-to-metal transition fittings or unions.

3.5 HANGER AND SUPPORT INSTALLATION

A. Comply with requirements for seismic-restraint devices in Section 220548 "Vibration and Seismic Controls for Plumbing and HVAC Piping and Equipment."

B. Comply with requirements for pipe hanger, support products, and installation in Section 220529 "Hangers and Supports for Plumbing and HVAC Piping and Equipment."

1. Vertical Piping: MSS Type 8 or 42, clamps.
2. Individual, Straight, Horizontal Piping Runs:

    a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
    b. Longer Than 100 Feet: MSS Type 43, adjustable roller hangers.
    c. Longer Than 100 Feet if Indicated: MSS Type 49, spring cushion rolls.

3. Multiple, Straight, Horizontal Piping Runs 100 Feet or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
4. Base of Vertical Piping: MSS Type 52, spring hangers.

C. Support vertical piping and tubing at base and at each floor.

D. Rod diameter may be reduced one size for double-rod hangers, to a minimum of 3/8 inch.

E. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 3/4 and Smaller: 60 inches with 3/8-inch rod.
2. NPS 1 and NPS 1-1/4: 72 inches with 3/8-inch rod.
3. NPS 1-1/2 and NPS 2: 96 inches with 3/8-inch rod.
4. NPS 2-1/2: 108 inches with 1/2-inch rod.
5. NPS 3 to NPS 5: 10 feet with 1/2-inch rod.
6. NPS 6: 10 feet with 5/8-inch rod.
7. NPS 8: 10 feet with 3/4-inch rod.

F. Install supports for vertical copper tubing every 10 feet.

G. Install vinyl-coated hangers for PEX tubing with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1 and Smaller: 32 inches with 3/8-inch rod.

H. Install hangers for vertical PEX tubing every 48 inches.

I. Support piping and tubing not listed in this article according to MSS SP-58 and manufacturer's written instructions.

3.6 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. When installing piping adjacent to equipment and machines, allow space for service and maintenance.

C. Connect domestic water piping to exterior water-service piping. Use transition fitting to join dissimilar piping materials.

D. Connect domestic water piping to water-service piping with shutoff valve; extend and connect to the following:

1. Domestic Water Booster Pumps: Cold-water suction and discharge piping.
2. Water Heaters: Cold-water inlet and hot-water outlet piping in sizes indicated, but not smaller than sizes of water heater connections.
3. Plumbing Fixtures: Cold- and hot-water-supply piping in sizes indicated, but not smaller than that required by plumbing code.
4. Equipment: Cold- and hot-water-supply piping as indicated, but not smaller than equipment connections. Provide shutoff valve and union for each connection. Use flanges instead of unions for NPS 2-1/2 and larger.

3.7 IDENTIFICATION

A. Identify system components. Comply with requirements for identification materials and installation in Section 220553 "Identification for Plumbing and HVAC Piping and Equipment."

B. Label pressure piping with system operating pressure.

3.8 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Piping Inspections:

a. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
b. During installation, notify authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:

1) Roughing-in Inspection: Arrange for inspection of piping before concealing or closing in after roughing in and before setting fixtures.
2) Final Inspection: Arrange for authorities having jurisdiction to observe tests specified in "Piping Tests" Subparagraph below and to ensure compliance with requirements.

c. Reinspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections and arrange for reinspection.
d. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

2. Piping Tests:

a. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
b. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit a separate report for each test, complete with diagram of portion of piping tested.
c. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
d. Cap and subject piping to static water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow it to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
e. Repair leaks and defects with new materials, and retest piping or portion thereof until satisfactory results are obtained.
f. Prepare reports for tests and for corrective action required.

B. Domestic water piping will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.9 ADJUSTING

A. Perform the following adjustments before operation:

1. Close drain valves, hydrants, and hose bibbs.
2. Open shutoff valves to fully open position.
3. Open throttling valves to proper setting.
4. Adjust balancing valves in hot-water-circulation return piping to provide adequate flow.

    a. Manually adjust ball-type balancing valves in hot-water-circulation return piping to provide hot-water flow in each branch.
    b. Adjust calibrated balancing valves to flows indicated.

5. Remove plugs used during testing of piping and for temporary sealing of piping during installation.
6. Remove and clean strainer screens. Close drain valves and replace drain plugs.
7. Remove filter cartridges from housings and verify that cartridges are as specified for application where used and are clean and ready for use.
8. Check plumbing specialties and verify proper settings, adjustments, and operation.

3.10 CLEANING

A. Clean and disinfect potable domestic water piping as follows:

1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction; if methods are not prescribed, use procedures described in either AWWA C651 or AWWA C652 or follow procedures described below:

    a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
    b. Fill and isolate system according to either of the following:

1) Fill system or part thereof with water/chlorine solution with at least 50 ppm of chlorine. Isolate with valves and allow to stand for 24 hours.
2) Fill system or part thereof with water/chlorine solution with at least 200 ppm of chlorine. Isolate and allow to stand for three hours.

c. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.
d. Repeat procedures if biological examination shows contamination.
e. Submit water samples in sterile bottles to authorities having jurisdiction.

B. Prepare and submit reports of purging and disinfecting activities. Include copies of water-sample approvals from authorities having jurisdiction.

C. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

3.11 PIPING SCHEDULE

A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.

B. Flanges and unions may be used for aboveground piping joints unless otherwise indicated.

C. Fitting Option: Extruded-tee connections and brazed joints may be used on aboveground copper tubing.

Application	**Location**	**Size**	**Material**	**Fittings**
Domestic Water Piping	Indoor Above Grade	All	PEX or Type L Copper	PEX: cold expansion fittings and reinforcing rings Copper: Sweat or Pressure Seal

END OF SECTION

PART 1 - **GENERAL**

1.1 SUMMARY

A. Section Includes:

1. Vacuum breakers.
2. Backflow preventers.
3. Water pressure-reducing valves.
4. Temperature-actuated, water mixing valves.
5. Bronze, Calibrated-Orifice, Balancing Valves
6. Strainers.
7. Drain valves.
8. Water-hammer arresters.
9. Trap-seal primer valves.

B. Related Requirements:

1. Section 220500 “General Provisions of Plumbing and HVAC” for Expansion Loops, Alignment Guides, Dielectric Fittings, Sleeves and Sleeve Seals, Sealants, Escutcheons and floor plates.
2. Section 220519 "Meters and Gages for Plumbing and HVAC Piping" for thermometers, pressure gages.
3. Section 221116 "Domestic Water Piping" for piping and fittings.
4. Section 224500 "Emergency Plumbing Fixtures" for water tempering equipment.
5. Section 224713 "Drinking Fountains" for water filters for water coolers.
6. Section 224716 "Pressure Water Coolers" for water filters for water coolers.
7. Section 224723 "Remote Water Coolers" for water filters for water coolers.

1.2 ACTION SUBMITTALS

A. See Section 220000 “General Requirement of Plumbing and HVAC” for submittal requirements.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PIPING SPECIALTIES

A. Potable-water piping and components shall comply with NSF 61 Annex G and NSF 14. Mark "NSF-pw" on plastic piping components.

2.2 PERFORMANCE REQUIREMENTS

A. Minimum Working Pressure for Domestic Water Piping Specialties: 125 psig unless otherwise indicated.

2.3 VACUUM BREAKERS

A. Pipe-Applied, Atmospheric-Type Vacuum Breakers:

1. Standard: ASSE 1001.
2. Size: NPS 1/4 to NPS 3, as required to match connected piping.
3. Body: Bronze.
4. Inlet and Outlet Connections: Threaded.
5. Finish: Chrome plated.

B. Hose-Connection Vacuum Breakers:

1. Standard: ASSE 1011.
2. Body: Bronze, nonremovable, with manual drain.
3. Outlet Connection: Garden-hose threaded complying with ASME B1.20.7.
4. Finish: Chrome or nickel plated.

2.4 BACKFLOW PREVENTERS

A. Reduced-Pressure-Principle Backflow Preventers:

1. Manufacturers:
   a. Watts
   b. Zurn Wilkins
   c. Prior approved Equal
2. Description:
   a. Standard: ASSE 1013.
   b. Operation: Continuous-pressure applications.
   c. Pressure Loss: 12 psig maximum, through middle third of flow range.
   d. Size: See Drawings – Line size of size not specifically listed.
   e. Body: Bronze for NPS 2 and smaller; cast iron with interior lining that complies with AWWA C550 or that is FDA approved for NPS 2-1/2 and larger.
   f. End Connections: Threaded for NPS 2 and smaller; flanged for NPS 2-1/2 and larger.
   g. Accessories:
      1) Valves NPS 2 and Smaller: Ball type with threaded ends on inlet and outlet.
      2) Valves NPS 2-1/2 and Larger: Outside-screw and yoke-gate type with flanged ends on inlet and outlet.
      3) Air-Gap Fitting: ASME A112.1.2, matching backflow-preventer connection.

B. Double-Check, Backflow-Prevention Assemblies:

1. Manufacturers:
   a. Watts
   b. Zurn Wilkins
   c. Prior approved Equal

2. Description:
   a. Standard: ASSE 1015.
   b. Operation: Continuous-pressure applications unless otherwise indicated.
   c. Pressure Loss: 5 psig maximum, through middle third of flow range.
   d. Size: See Drawings – Line size of size not specifically listed.
   e. Body: Bronze for NPS 2 and smaller; cast iron with interior lining that complies with AWWA C550 or that is FDA approved for NPS 2-1/2 and larger.
   f. End Connections: Threaded for NPS 2 and smaller; flanged for NPS 2-1/2 and larger.

g. Accessories:
   1) Valves NPS 2 and Smaller: Ball type with threaded ends on inlet and outlet.
   2) Valves NPS 2-1/2 and Larger: Outside-screw and yoke-gate type with flanged ends on inlet and outlet.

2.5 WATER PRESSURE-REDUCING VALVES

A. Water Regulators:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Apollo Valves; Conbraco Industries, Inc.
   b. Watts; a Watts Water Technologies company.
   c. Zurn Industries, LLC.

2. Standard: ASSE 1003.

3. Pressure Rating: Initial working pressure of 150 psig.
4. Size: See Drawings – Line size of size not specifically listed.
5. Body: Bronze for NPS 2 and smaller; cast iron with interior lining that complies with AWWA C550 or that is FDA approved for NPS 2-1/2 and NPS 3.
6. Valves for Booster Heater Water Supply: Include integral bypass.
7. End Connections: Threaded for NPS 2 and smaller; flanged for NPS 2-1/2 and NPS 3.

2.6 TEMPERATURE-ACTUATED, WATER MIXING VALVES

A. Water-Temperature Limiting Devices:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

   a. Leonard Valve Company.
   b. Symmons Industries, Inc.
   c. Watts; a Watts Water Technologies company.
   d. Zurn Industries, LLC.

2. Standard: ASSE 1017.

3. Pressure Rating: 125 psig.
4. Type: Thermostatically controlled, water mixing valve.
5. Material: Bronze body with corrosion-resistant interior components.
6. Connections: Threaded union inlets and outlet.
7. Accessories: Check stops on hot- and cold-water supplies, and adjustable, temperature-control handle.
8. Valve Finish: Chrome plated.

B. Primary, Thermostatic, Water Mixing Valves:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Armstrong International, Inc.
b. Leonard Valve Company.
c. Symmons Industries, Inc.
d. Zurn Industries, LLC.

2. Standard: ASSE 1017.

3. Pressure Rating: 125 psig minimum unless otherwise indicated.
4. Type: Cabinet-type, thermostatically controlled, water mixing valve.
5. Material: Bronze body with corrosion-resistant interior components.
6. Connections: Threaded union inlets and outlet.
7. Accessories: Manual temperature control, check stops on hot- and cold-water supplies, and adjustable, temperature-control handle.
8. Valve Finish: Chrome plated.
9. Piping Finish: Chrome plated.
10. Cabinet: Factory fabricated, stainless steel, for surface mounting and with hinged, stainless-steel door.

2.7 BRONZE, CALIBRATED-ORIFICE, BALANCING VALVES

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Bell & Gossett; a Xylem brand.
   b. Flow Design, Inc.
   c. Nexus Valve, Inc.
   d. TACO Comfort Solutions, Inc.
2. Body: Bronze, ball or plug type with calibrated orifice or venturi.
3. Ball: Brass or stainless steel.
4. Plug: Resin.
5. Seat: PTFE.
6. End Connections: Threaded or socket.
7. Pressure Gage Connections: Integral seals for portable differential pressure meter.
8. Handle Style: Lever, with memory stop to retain set position.
9. CWP Rating: Minimum 125 psig.
10. Maximum Operating Temperature: 250 deg F.

2.8 STRAINERS FOR DOMESTIC WATER PIPING

A. Y-Pattern Strainers:

1. Pressure Rating: 125 psig minimum unless otherwise indicated.
2. Body: Bronze for NPS 2 and smaller; cast iron with interior lining that complies with AWWA C550 or that is FDA approved, epoxy coated and for NPS 2-1/2 and larger.
3. End Connections: Threaded for NPS 2 and smaller; flanged for NPS 2-1/2 and larger.
4. Screen: Stainless steel with round perforations unless otherwise indicated.
5. Perforation Size:

   a. Strainers NPS 2 and Smaller: 0.020 inch.
   b. Strainers NPS 2-1/2 to NPS 4: 0.045 inch.

6. Drain: Factory-installed, hose-end drain valve with cap.

2.9 DRAIN VALVES

A. Ball-Valve-Type, Hose-End Drain Valves:

1. Standard: MSS SP-110 for standard-port, two-piece ball valves.
2. Pressure Rating: 400-psig minimum CWP.
3. Size: NPS 3/4.
4. Body: Copper alloy.
5. Ball: Chrome-plated brass.
6. Seats and Seals: Replaceable.
7. Handle: Vinyl-covered steel.
8. Inlet: Threaded or solder joint.
9. Outlet: Threaded, short nipple with garden-hose thread complying with ASME B1.20.7 and cap with brass chain.

2.10 WATER-HAMMER ARRESTERS

A. Water-Hammer Arresters:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Jay R. Smith Mfg. Co.
    b. Sioux Chief Manufacturing Company, Inc.
    c. Watts; a Watts Water Technologies company.
    d. Zurn Industries, LLC.

2. Standard: ASSE 1010 or PDI-WH 201.

3. Type: Metal bellows or Copper tube with piston.
4. Size: ASSE 1010, Sizes AA and A through F, or PDI-WH 201, Sizes A through F.

2.11 TRAP-SEAL PRIMER DEVICE

A. Supply-Type, Trap-Seal Primer Device:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Jay R. Smith Mfg. Co.
    b. Sioux Chief Manufacturing Company, Inc.
    c. Watts; a Watts Water Technologies company.
    d. Zurn Industries, LLC.

2. Standard: ASSE 1018.

3. Pressure Rating: 125 psig minimum.
4. Body: Bronze.
5. Inlet and Outlet Connections: NPS 1/2 threaded, union, or solder joint.
6. Gravity Drain Outlet Connection: NPS 1/2 threaded or solder joint.
7. Finish: Chrome plated, or rough bronze for units used with pipe or tube that is not chrome finished.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install double check backflow preventers in each water supply to mechanical equipment and systems and to other equipment and water systems that may be sources of contamination. Comply with authorities having jurisdiction.

1. Locate backflow preventers in same room as connected equipment or system.
2. Install drain for backflow preventers with atmospheric-vent drain connection with air-gap fitting, fixed air-gap fitting, or equivalent positive pipe separation of at least two pipe diameters in drain piping and pipe-to-floor drain. Locate air-gap device attached to or under backflow preventer. Simple air breaks are unacceptable for this application.
3. Do not install bypass piping around backflow preventers.

B. Install water regulators with inlet and outlet shutoff valves. Install pressure gages on inlet and outlet.

C. Install temperature-actuated, water mixing valves with check stops or shutoff valves on inlets and with shutoff valve on outlet.

1. Install cabinet-type units recessed in or surface mounted on wall as specified.

D. Install balancing valves at each hot water recirculation branch connection to the return main.

E. Install Y-pattern strainers for water on supply side of each water pressure-reducing valve, solenoid valve and pump.

F. Install water-hammer arresters in water piping according to PDI-WH 201.

G. Install supply-type, trap-seal primer valves with outlet piping pitched down toward drain trap a minimum of 1 percent, and connect to floor-drain body, trap, or inlet fitting. Adjust valve for proper flow.

3.2 CONNECTIONS

A. Comply with requirements for ground equipment in Section 260526 "Grounding and Bonding for Electrical Systems."

B. Fire-retardant-treated-wood blocking is specified in Section 260519 "Low-Voltage Electrical Power Conductors and Cables" for electrical connections.

3.3 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Test each reduced-pressure-principle backflow preventer and double-check, detector-assembly backflow preventer according to authorities having jurisdiction and the device's reference standard.

B. Domestic water piping specialties will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports.

3.4 ADJUSTING

A. Set field-adjustable pressure set points of water pressure-reducing valves. Verify pressure set points with Engineer prior to setting

B. Set field-adjustable flow set points of balancing valves. Verify flow rates with Engineer prior to setting.

C. Set field-adjustable temperature set points of temperature-actuated, water mixing valves. Verify temperature setting with engineer prior to setting.

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pipe, tube, and fittings.
2. Specialty pipe fittings.

1.2 ACTION SUBMITTALS

A. See section 220000 “General Requirements of Plumbing and HVAC” for submittal requirements.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressure unless otherwise indicated:

1. Soil, Waste, and Vent Piping: 10-foot head of water.

B. Seismic Performance: Soil, waste, and vent piping and support and installation shall withstand the effects of earthquake motions determined according to ASCE/SEI 7. See section 220548 “Vibration and Seismic Controls for Plumbing and HVAC Piping and Equipment”

2.2 PIPING MATERIALS

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

B. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.3 HUBLESS, CAST-IRON SOIL PIPE AND FITTINGS

A. Pipe and Fittings: ASTM A 888 or CISPI 301.

B. CISPI, Hubless-Piping Couplings:

1. Standards: ASTM C 1277 and CISPI 310.
2. Description: Stainless-steel corrugated shield with stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve with integral, center pipe stop.

2.4 COPPER TUBE AND FITTINGS

A. Copper Type DWV Tube: ASTM B 306, drainage tube, drawn temper.

B. Copper Drainage Fittings: ASME B16.23, cast copper or ASME B16.29, wrought copper, solder-joint fittings.

C. Copper Pressure Fittings:

1. Copper Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper, solder-joint fittings. Furnish wrought-copper fittings if indicated.
2. Copper Unions: MSS SP-123, copper-alloy, hexagonal-stock body with ball-and-socket, metal-to-metal seating surfaces, and solder-joint or threaded ends.

D. Copper Flanges: ASME B16.24, Class 150, cast copper with solder-joint end.

1. Flange Gasket Materials: ASME B16.21, full-face, flat, nonmetallic, asbestos-free, 1/8-inch maximum thickness unless thickness or specific material is indicated.
2. Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.

E. Solder: ASTM B 32, lead free with ASTM B 813, water-flushable flux.

2.5 PVC PIPE AND FITTINGS

A. Comply with NSF 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-dwv" for plastic drain, waste, and vent piping and "NSF-sewer" for plastic sewer piping.

B. Solid-Wall PVC Pipe: ASTM D 2665, drain, waste, and vent.

C. PVC Socket Fittings: ASTM D 2665, made to ASTM D 3311, drain, waste, and vent patterns and to fit Schedule 40 pipe.

D. Adhesive Primer: ASTM F 656.

E. Solvent Cement: ASTM D 2564.

2.6 SPECIALTY PIPE FITTINGS

A. Transition Couplings:

1. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.
2. Unshielded, Non-pressure Transition Couplings:

a. Standard: ASTM C 1173.
b. Description: Elastomeric, sleeve-type, reducing or transition pattern. Include shear ring and corrosion-resistant-metal tension band and tightening mechanism on each end.
c. End Connections: Same size as and compatible with pipes to be joined.
d. Sleeve Materials:

1) For Cast-Iron Soil Pipes: ASTM C 564, rubber.

2) For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
3) For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.

3. Shielded, Non-pressure Transition Couplings:

a. Standard: ASTM C 1460.
b. Description: Elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.
c. End Connections: Same size as and compatible with pipes to be joined.

PART 3 - EXECUTION

3.1 EARTH MOVING

A. Comply with requirements for excavating, trenching, and backfilling specified in Section 312000 "Earth Moving."

3.2 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems.

1. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations.
2. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.

C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

E. Install piping to permit valve servicing.

F. Install piping at indicated slopes.

G. Install piping free of sags and bends.

H. Install fittings for changes in direction and branch connections.

I. Install piping to allow application of insulation.

J. Install seismic restraints on piping. Comply with requirements for seismic-restraint devices specified in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."

K. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends.

1. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical.
2. Use long-turn, double Y-branch and 1/8-bend fittings if two fixtures are installed back to back or side by side with common drain pipe.

    a. Straight tees, elbows, and crosses may be used on vent lines.

3. Do not change direction of flow more than 90 degrees.
4. Use proper size of standard increasers and reducers if pipes of different sizes are connected.

    a. Reducing size of waste piping in direction of flow is prohibited.

L. Lay buried building waste piping beginning at low point of each system.

1. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream.
2. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.
3. Maintain swab in piping and pull past each joint as completed.

M. Install soil and waste and vent piping at the following minimum slopes unless otherwise indicated:

1. Horizontal Sanitary Waste: 1/4” per foot downward in direction of flow. 1/8” per foot is allowable if necessitated by site conditions.
2. Vent Piping: 1/8” per foot down toward vertical fixture vent or toward vent stack.

N. Install cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."

O. Install aboveground copper tubing according to CDA's "Copper Tube Handbook."

P. Install aboveground PVC piping according to ASTM D 2665.

Q. Install underground PVC piping according to ASTM D 2321.

R. Plumbing Specialties:

1. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers in sanitary waste gravity-flow piping.

    a. Comply with requirements for cleanouts specified in Section 221319 "Sanitary Waste Piping Specialties."

S. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

T. Install sleeves for piping penetrations of walls, ceilings, and floors.

1. Comply with requirements for sleeves specified in Section 220500 "General Provisions of Plumbing and HVAC."

U. Install sleeve seals for piping penetrations of concrete walls and slabs.

1. Comply with requirements for sleeve seals specified in Section 220517 "Sleeves and Sleeve Seals for Plumbing Piping."

V. Install escutcheons for piping penetrations of walls, ceilings, and floors.

1. Comply with requirements for escutcheons specified in Section 220518 "Escutcheons for Plumbing Piping."

3.3 JOINT CONSTRUCTION

A. Join hub-and-spigot, cast-iron soil piping with gasket joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for compression joints.

B. Join copper tube and fittings with soldered joints according to ASTM B 828. Use ASTM B 813, water-flushable, lead-free flux and ASTM B 32, lead-free-alloy solder.

C. Grooved Joints: Cut groove ends of pipe according to AWWA C606. Lubricate and install gasket over ends of pipes or pipe and fitting. Install coupling housing sections, over gasket, with keys seated in piping grooves. Install and tighten housing bolts.

D. Plastic, Non-pressure-Piping, Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:

1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
2. ABS Piping: Join according to ASTM D 2235 and ASTM D 2661 appendixes.
3. PVC Piping: Join according to ASTM D 2855 and ASTM D 2665 appendixes.

3.4 SPECIALTY PIPE FITTING INSTALLATION

A. Transition Couplings:

1. Install transition couplings at joints of piping with small differences in ODs.
2. In Waste Drainage Piping: Shielded, nonpressure transition couplings.

3.5 VALVE INSTALLATION

A. Comply with requirements in Section 220523.12 "Ball Valves for Plumbing Piping," Section 220523.13 "Butterfly Valves for Plumbing Piping," Section 220523.14 "Check Valves for Plumbing Piping," and Section 220523.15 "Gate Valves for Plumbing Piping" for general-duty valve installation requirements.

B. Shutoff Valves:

1. Install shutoff valve on each sewage pump discharge.
2. Install gate or full-port ball valve for piping NPS 2 and smaller.
3. Install gate valve for piping NPS 2-1/2 and larger.

C. Check Valves: Install swing check valve, between pump and shutoff valve, on each sewage pump discharge.

3.6 HANGER AND SUPPORT INSTALLATION

A. Comply with requirements for seismic-restraint devices specified in Section 220548 "Vibration and Seismic Controls for Plumbing and HVAC Piping and Equipment."

B. Comply with requirements for pipe hanger and support devices and installation specified in Section 220529 "Hangers and Supports for Plumbing and HVAC Piping and Equipment."
   1. Vertical Piping: MSS Type 8 or Type 42, clamps.
   2. Install individual, straight, horizontal piping runs:

      a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.
      b. Longer Than 100 Feet: MSS Type 43, adjustable roller hangers.
      c. Longer Than 100 Feet if Indicated: MSS Type 49, spring cushion rolls.

   3. Multiple, Straight, Horizontal Piping Runs 100 Feet or Longer: MSS Type 44, pipe rolls. Support pipe rolls on trapeze.
   4. Base of Vertical Piping: MSS Type 52, spring hangers.

C. Support horizontal piping and tubing within 12 inches of each fitting, valve, and coupling.

D. Support vertical piping and tubing at base and at each floor.

E. Rod diameter may be reduced one size for double-rod hangers, with 3/8-inch minimum rods.

F. Install hangers for cast-iron soil piping with the following maximum horizontal spacing and minimum rod diameters:

   1. NPS 1-1/2 and NPS 2: 60 inches with 3/8-inch rod.
   2. NPS 3: 60 inches with 1/2-inch rod.
   3. NPS 4 and NPS 5: 60 inches with 5/8-inch rod.
   4. NPS 6 and NPS 8: 60 inches with 3/4-inch rod.
   5. NPS 10 and NPS 12: 60 inches with 7/8-inch rod.
   6. Spacing for 10-foot lengths may be increased to 10 feet. Spacing for fittings is limited to 60 inches.

G. Install supports for vertical cast-iron soil piping every 15 feet.

H. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:

   1. NPS 1-1/4: 72 inches with 3/8-inch rod.
   2. NPS 1-1/2 and NPS 2: 96 inches with 3/8-inch rod.
   3. NPS 2-1/2: 108 inches with 1/2-inch rod.
   4. NPS 3 and NPS 5: 10 feet with 1/2-inch rod.
   5. NPS 6: 10 feet with 5/8-inch rod.
   6. NPS 8: 10 feet with 3/4-inch rod.

I. Install supports for vertical copper tubing every 10 feet.

J. Install hangers for PVC piping with the following maximum horizontal spacing and minimum rod diameters:

   1. NPS 1-1/2 and NPS 2: 48 inches with 3/8-inch rod.
   2. NPS 3: 48 inches with 1/2-inch rod.
   3. NPS 4 and NPS 5: 48 inches with 5/8-inch rod.

4. NPS 6 and NPS 8: 48 inches with 3/4-inch rod.
5. NPS 10 and NPS 12: 48 inches with 7/8-inch rod.

K. Install supports for vertical PVC piping every 48 inches.

L. Support piping and tubing not listed above according to MSS SP-58 and manufacturer's written instructions.

3.7 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.

C. Connect waste and vent piping to the following:

1. Plumbing Fixtures: Connect waste piping in sizes indicated, but not smaller than required by plumbing code.
2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.
3. Plumbing Specialties: Connect waste and vent piping in sizes indicated, but not smaller than required by plumbing code.
4. Install test tees (wall cleanouts) in conductors near floor and floor cleanouts with cover flush with floor.
5. Equipment: Connect waste piping as indicated.

    a. Provide shutoff valve if indicated and union for each connection.
    b. Use flanges instead of unions for connections NPS 2-1/2 and larger.

D. Where installing piping adjacent to equipment, allow space for service and maintenance of equipment.

E. Make connections according to the following unless otherwise indicated:

1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.

3.8 IDENTIFICATION

A. Identify exposed sanitary waste and vent piping.

B. Comply with requirements for identification specified in Section 220553 "Identification for Plumbing and HVAC Piping and Equipment."

3.9 FIELD QUALITY CONTROL

A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.

1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.

B. Re-inspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for re-inspection.

C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

D. Test sanitary waste and vent piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:

1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired.

    a. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.

2. Leave uncovered and unconcealed new, altered, extended, or replaced waste and vent piping until it has been tested and approved.

    a. Expose work that was covered or concealed before it was tested.

3. Roughing-in Plumbing Test Procedure: Test waste and vent piping except outside leaders on completion of roughing-in.

    a. Close openings in piping system and fill with water to point of overflow, but not less than 10-foot head of water.
    b. From 15 minutes before inspection starts to completion of inspection, water level must not drop.
    c. Inspect joints for leaks.

4. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight.

    a. Plug vent-stack openings on roof and building drains where they leave building. Introduce air into piping system equal to pressure of 1-inch wg.
    b. Use U-tube or manometer inserted in trap of water closet to measure this pressure.
    c. Air pressure must remain constant without introducing additional air throughout period of inspection.
    d. Inspect plumbing fixture connections for gas and water leaks.

5. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
6. Prepare reports for tests and required corrective action.

3.10 CLEANING AND PROTECTION

A. Clean interior of piping. Remove dirt and debris as work progresses.

B. Protect sanitary waste and vent piping during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.

C. Place plugs in ends of uncompleted piping at end of day and when work stops.

D. Exposed PVC Piping: Protect plumbing vents exposed to sunlight with two coats of water-based latex paint.

E. Repair damage to adjacent materials caused by waste and vent piping installation.

3.11 PIPING SCHEDULE

A. Piping system materials are identified in the table below. If more than one material is listed, selection from the materials listed is at the Contractor's option.

Application	**Location**	**Size**	**Material**	**Fittings**
Sanitary Waste and Vent	Below Grade	All	PVC	Solvent Joint
Sanitary Waste and Vent	Above Grade	All	Cast Iron	No-Hub
Condensate Drain	Above Grade	All	PVC	Solvent Joint

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Cleanouts.
2. Miscellaneous sanitary drainage piping specialties.

B. Related Requirements:

1. Section 221316 “Sanitary Waste and Vent Piping”

1.2 SUBMITTALS

A. See Section 220000 “General Requirements of Plumbing and HVAC” for submittal requirements.

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTIONS

A. Sanitary waste piping specialties shall bear label, stamp, or other markings of specified testing agency.

B. Comply with NSF 14 for plastic sanitary waste piping specialty components.

2.2 CLEANOUTS

A. Above Grade Wall Cleanout
1. Provide JR Smith 4422 or approved equal
2. Description: Cast iron caulked spigot ferrule with cast bronze taper thread plug and stainless steel round cover and screw.

B. Finished Floor Cleanout
1. Provide JR Smith 4100 or approved equal
2. Description: Cast iron cleanout with extra heavy duty round, adjustable, scoriated, secured nickel bronze top, and no-hub outlet, gasket seal bronze plug and flashing clamp for.

C. Outdoor Cleanout
1. Provide JR Smith 4241S or approved equal
2. Description: Cast iron floor level cleanout assembly with heavy duty, round, adjustable, scoriated cast iron top, non-tilt tractor cover, gasket seal bronze plug.

2.3 MISCELLANEOUS SANITARY DRAINAGE PIPING SPECIALTIES

A. Open Drains or Hub Drains:

1. Description: Shop or field fabricate from ASTM A 74, Service class, hub-less, cast-iron soil-pipe fittings. Include P-trap, riser section; and where required, increaser fitting joined with ASTM C 564 rubber gaskets.
2. Size: See drawings. If not shown drain shall 2” minim or one size larger than piping discharging to the drain.

B. Floor-Drain, Trap-Seal Primer Fittings:

1. Description: Cast iron, with threaded inlet and threaded or spigot outlet, and trap-seal primer valve connection.
2. Size: Same as floor drain outlet with NPS 1/2 side inlet.

C. Floor-Drain, Trap Seal:
1. Barrier type floor drain or sink trap seal device.
2. IAPMO 7479 and ASSE std. 1072 listed.

D. Air-Gap Fittings:

1. Standard: ASME A112.1.2, for fitting designed to ensure fixed, positive air gap between installed inlet and outlet piping.
2. Body: Bronze or cast iron.
3. Inlet: Opening in top of body.
4. Outlet: Larger than inlet.
5. Size: Same as connected waste piping and with inlet large enough for associated indirect waste piping.

E. Expansion Joints:

1. Standard: ASME A112.6.4.
2. Body: Cast iron with bronze sleeve, packing, and gland.
3. End Connections: Matching connected piping.
4. Size: Same as connected soil, waste, or vent piping.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install cleanouts in aboveground piping and building drain piping according to the following, unless otherwise indicated:

1. Size same as drainage piping up to NPS 4. Use NPS 4 for larger drainage piping unless larger cleanout is indicated.
2. Locate at each change in direction of piping greater than 45 degrees.
3. Locate at minimum intervals of 50 feet for piping NPS 4 and smaller and 100 feet for larger piping.
4. Locate at base of each vertical soil and waste stack.

B. For floor cleanouts for piping below floors, install cleanout with top flush with finished floor. It shall be the responsibility of the plumbing contractor to coordinate the installation of cleanouts with the general contractor and floor contractor to ensure that floor cleanouts are properly adjusted so that the top is flush and level with finished flooring material. Cleanout covers that are not flush and level with the finished floor will be rejected and the plumbing contractor will be

required to sawcut or core drill the floor, provide and install and new cleanout, coordination installation of new concrete and new finished flooring material.

C. For cleanouts located in concealed piping, install cleanout wall access covers, of types indicated, with frame and cover flush with finished wall.

D. Coordinate installation of roof flashing assemblies on sanitary stack vents and vent stacks that extend through roof with the general contractor or construction manager.

E. Assemble open drain fittings and install with top of hub 2 inches above floor.

F. Install deep-seal traps on floor drains and other waste outlets, if indicated.

G. Install floor-drain, trap-seal primer fittings on inlet to floor drains that require trap-seal primer connection.

1. Exception: Fitting may be omitted if trap has trap-seal primer connection.
2. Size: Same as floor drain inlet.

H. Install air-gap fittings on draining-type backflow preventers and on indirect-waste piping discharge into sanitary drainage system.

I. Install expansion joints on vertical stacks and conductors. Position expansion joints for easy access and maintenance.

J. Install wood-blocking reinforcement for wall-mounting-type specialties.

K. Install traps on plumbing specialty drain outlets. Omit traps on indirect wastes unless trap is indicated.

3.2 CONNECTIONS

A. Comply with requirements in Section 221316 "Sanitary Waste and Vent Piping" for piping installation requirements. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to equipment to allow service and maintenance.

C. Ground equipment according to Section 260526 "Grounding and Bonding for Electrical Systems."

D. Connect wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

3.3 PROTECTION

A. Protect drains during remainder of construction period to avoid clogging with dirt or debris and to prevent damage from traffic or construction work.

B. Place plugs in ends of uncompleted piping at end of each day or when work stops.

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Commercial, electric, storage, domestic-water heaters.
2. Commercial, light-duty, storage, electric, domestic-water heaters.
3. Thermostat-control, electric, tankless, domestic-water heaters.
4. Domestic-water heater accessories.

1.2 SUBMITTALS

A. See Section 220000 “General Requirements of Mechanical and Plumbing” for submittal requirements.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. ASME Compliance: Where ASME-code construction is indicated, fabricate and label commercial, domestic-water heater storage tanks to comply with ASME Boiler and Pressure Vessel Code: Section VIII, Division 1.

C. NSF Compliance: Fabricate and label equipment components that will be in contact with potable water to comply with NSF 61 Annex, "Drinking Water System Components - Health Effects."

1.4 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of electric, domestic-water heaters that fail in materials or workmanship within specified warranty period.

1. Warranty Periods: From date of Substantial Completion.

    a. Commercial, Electric, Storage, Domestic-Water Heaters:

        1) Storage Tank: Three years.
        2) Controls and Other Components: One years.

    b. Commercial, Light-Duty, Storage, Electric, Domestic-Water Heaters:

        1) Storage Tank: Three years.
        2) Controls and Other Components: One years.

PART 2 - PRODUCTS

2.1 COMMERCIAL, ELECTRIC, DOMESTIC-WATER HEATERS

A. Commercial, Electric, Storage, Domestic-Water Heaters:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Bradford White Corporation.
    b. Lochinvar, LLC.
    c. Rheem Manufacturing Company.
    d. Smith, A. O. Corporation.

2. Standard: UL 1453.

3. Storage-Tank Construction: ASME-code, steel vertical arrangement.

    a. Tappings: Factory fabricated of materials compatible with tank and piping connections. Attach tappings to tank before testing.

        1) NPS 2 and Smaller: Threaded ends according to ASME B1.20.1.
        2) NPS 2-1/2 and Larger: Flanged ends according to ASME B16.5 for steel and stainless-steel flanges, and according to ASME B16.24 for copper and copper-alloy flanges.

    b. Pressure Rating: 150 psig.
    c. Interior Finish: Comply with NSF 61 Annex barrier materials for potable-water tank linings, including extending lining material into tappings.

4. Factory-Installed Storage-Tank Appurtenances:

    a. Anode Rod: Replaceable magnesium.
    b. Drain Valve: Corrosion-resistant metal complying with ASSE 1005.
    c. Insulation: Comply with ASHRAE/IESNA 90.1.
    d. Jacket: Steel with enameled finish.
    e. Heating Elements: Electric, screw-in or bolt-on immersion type arranged in multiples of three.
    f. Temperature Control: Adjustable thermostat.
    g. Safety Controls: High-temperature-limit and low-water cutoff devices or systems.
    h. Relief Valves: ASME rated and stamped for combination temperature-and-pressure relief valves. Include one or more relief valves with total relieving capacity at least as great as heat input, and include pressure setting less than domestic-water heater working-pressure rating. Select one relief valve with sensing element that extends into storage tank.

5. Special Requirements: NSF 5 construction.

B. Commercial, Light-Duty, Storage, Electric, Domestic-Water Heaters:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Bradford White Corporation.

b. Lochinvar, LLC.
c. Rheem Manufacturing Company.
d. Smith, A. O. Corporation.

2. Standard: UL 174.
3. Storage-Tank Construction: Steel, vertical arrangement.

a. Tappings: ASME B1.20.1 pipe thread.
b. Pressure Rating: 150 psig.
c. Interior Finish: Comply with NSF 61 Annex barrier materials for potable-water tank linings, including extending lining material into tappings.

4. Factory-Installed Storage-Tank Appurtenances:

a. Anode Rod: Replaceable magnesium.
b. Dip Tube: Required unless cold-water inlet is near bottom of tank.
c. Drain Valve: ASSE 1005.
d. Insulation: Comply with ASHRAE/IESNA 90.1.
e. Jacket: Steel with enameled finish.
f. Heat-Trap Fittings: Inlet type in cold-water inlet and outlet type in hot-water outlet.
g. Heating Elements: Two; electric, screw-in immersion type; wired for simultaneous operation unless otherwise indicated. Limited to 12 kW total.
h. Temperature Control: Adjustable thermostat.
i. Safety Control: High-temperature-limit cutoff device or system.
j. Relief Valve: ASME rated and stamped for combination temperature-and-pressure relief valves. Include relieving capacity at least as great as heat input, and include pressure setting less than domestic-water heater working-pressure rating. Select relief valve with sensing element that extends into storage tank.

5. Special Requirements: NSF 5 construction with legs for off-floor installation.

C. Capacity and Characteristics:
1. See Drawings.

2.2 DOMESTIC-WATER HEATER ACCESSORIES

A. Domestic-Water Compression Tanks:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. AMTROL, Inc.
b. Taco
c. Armstrong
d. John Wood

2. Description: AMSE rated, steel pressure-rated tank constructed with welded joints and factory-installed butyl-rubber diaphragm. Include air precharge to minimum system-operating pressure at tank.

3. Construction:

a. Tappings: Factory-fabricated steel, welded to tank before testing and labeling. Include ASME B1.20.1 pipe thread.

b. Interior Finish: Comply with NSF 61 Annex barrier materials for potable-water tank linings, including extending finish into and through tank fittings and outlets.
c. Air-Charging Valve: Factory installed.

4. Capacity and Characteristics:
a. See Drawings.

B. Drain Pans: Corrosion-resistant metal with raised edge. Comply with ANSI/CSA LC 3. Include dimensions not less than base of domestic-water heater, and include drain outlet not less than NPS 3/4 with ASME B1.20.1 pipe threads or with ASME B1.20.7 garden-hose threads.

C. Piping-Type Heat Traps: Field-fabricated piping arrangement according to ASHRAE/IESNA 90.1.

D. Heat-Trap Fittings: ASHRAE 90.2.

E. Pressure-Reducing Valves: ASSE 1003 for water. Set at 25-psig-maximum outlet pressure unless otherwise indicated.

F. Combination Temperature-and-Pressure Relief Valves: ASME rated and stamped. Include relieving capacity at least as great as heat input, and include pressure setting less than domestic-water heater working-pressure rating. Select relief valves with sensing element that extends into storage tank.

G. Pressure Relief Valves: ASME rated and stamped. Include pressure setting less than domestic-water heater working-pressure rating.

H. Vacuum Relief Valves: ANSI Z21.22/CSA 4.4.

I. Shock Absorbers: ASSE 1010 or PDI-WH 201, Size A water hammer arrester.

J. Domestic-Water Heater Stands: Manufacturer's factory-fabricated steel stand for floor mounting, capable of supporting domestic-water heater and water. Include dimension that will support bottom of domestic-water heater a minimum of 18 inches above the floor.

K. Domestic-Water Heater Mounting Brackets: Manufacturer's factory-fabricated steel bracket for wall mounting, capable of supporting domestic-water heater and water.

2.3 SOURCE QUALITY CONTROL

A. Factory Tests: Test and inspect domestic-water heaters specified to be ASME-code construction, according to ASME Boiler and Pressure Vessel Code.

B. Hydrostatically test commercial domestic-water heaters to minimum of one and one-half times pressure rating before shipment.

C. Electric, domestic-water heaters will be considered defective if they do not pass tests and inspections. Comply with requirements in Section 014000 "Quality Requirements" for retesting and reinspecting requirements and Section 017300 "Execution" for requirements for correcting the Work.

D. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 DOMESTIC-WATER HEATER INSTALLATION

A. Commercial, Electric, Domestic-Water Heater Mounting: Install commercial, electric, domestic-water heaters on concrete base. Comply with requirements for concrete bases specified in Section 033000 "Cast-in-Place Concrete."

1. Exception: Omit concrete bases for commercial, electric, domestic-water heaters if installation on stand, bracket, suspended platform is indicated.
2. Maintain manufacturer's recommended clearances.
3. Arrange units so controls and devices that require servicing are accessible.
4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.
6. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
7. Install anchor bolts to elevations required for proper attachment to supported equipment.
8. Anchor domestic-water heaters to substrate.

B. Install electric, domestic-water heaters level and plumb, according to layout drawings, original design, and referenced standards. Maintain manufacturer's recommended clearances. Arrange units so controls and devices needing service are accessible.

1. Install shutoff valves on domestic-water-supply piping to domestic-water heaters and on domestic-hot-water outlet piping. Comply with requirements for shutoff valves specified in Section 220523 "General Duty Valves for Plumbing and HVAC".

C. Install commercial, electric, domestic-water heaters with seismic-restraint devices. Comply with requirements for seismic-restraint devices specified in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."

D. Install combination temperature-and-pressure relief valves in top portion of storage tanks. Use relief valves with sensing elements that extend into tanks. Extend commercial-water-heater relief-valve outlet, with drain piping same as domestic-water piping in continuous downward pitch, and discharge by positive air gap onto closest floor drain.

E. Install combination temperature-and-pressure relief valves in water piping for electric, domestic-water heaters without storage. Extend commercial-water-heater relief-valve outlet, with drain piping same as domestic-water piping in continuous downward pitch, and discharge by positive air gap onto closest floor drain.

F. Install water-heater drain piping as indirect waste to spill by positive air gap into open drains or over floor drains. Install hose-end drain valves at low points in water piping for electric, domestic-water heaters that do not have tank drains. Comply with requirements for hose-end drain valves specified in Section 221119 "Domestic Water Piping Specialties."

G. Install thermometers on outlet piping of electric, domestic-water heaters. Comply with requirements for thermometers specified in Section 220519 "Meters and Gages for Plumbing Piping."

H. Install piping-type heat traps on inlet and outlet piping of electric, domestic-water heater storage tanks without integral or fitting-type heat traps.

I. Fill electric, domestic-water heaters with water.

J. Charge domestic-water compression tanks with air.

3.2 CONNECTIONS

A. Comply with requirements for piping specified in Section 221116 "Domestic Water Piping." Drawings indicate general arrangement of piping, fittings, and specialties.

B. Where installing piping adjacent to electric, domestic-water heaters, allow space for service and maintenance of water heaters. Arrange piping for easy removal of domestic-water heaters.

3.3 IDENTIFICATION

A. Identify system components. Comply with requirements for identification specified in Section 220553 "Identification for Plumbing Piping and Equipment."

3.4 FIELD QUALITY CONTROL

A. Perform tests and inspections.
1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
2. Operational Test: After electrical circuitry has been energized, start units to confirm proper operation.
3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

B. Electric, domestic-water heaters will be considered defective if they do not pass tests and inspections. Comply with requirements in Section 014000 "Quality Requirements" for retesting and reinspecting requirements and Section 017300 "Execution" for requirements for correcting the Work.

C. Prepare test and inspection reports.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Plumbing fixtures shown and scheduled on the drawings.

1.2 SUBMITTALS

A. See section 220000 “General Requirements of Plumbing and HVAC” for submittal requirements.

PART 2 - PRODUCTS

2.1 PLUMBING FIXTURE MANUFACTURERS – The following manufacturers are approved. Fixtures and equipment other than those listed in the plumbing fixture schedule must be submitted for approval prior to bidding. Only products from the manufacturers listed below will be considered. Request for prior approval from manufacturers not listed below will not be considered.

A. FLOOR DRAINS & SINKS
1. FIXTURES
a. JR SMITH
b. ZURN
c. JOSAM

2. TRAP SEAL
a. TRAP GUARD
b. JR SMITH

3. TRAP PRIMERS
a. JR SMITH
b. WATTS
c. ZURN

B. LAVATORIES
1. FIXTURES
a. ACORN
b. JUST

2. CARRIERS AND SUPPORTS
a. JR SMITH
b. ZURN
c. ACORN

3. FAUCETS
a. MOEN COMMERCIAL
b. SLOAN
c. AMERICAN STANDARD

4. PIPING COVERS
   a. TRUBRO
   b. PLUMMEREX

C. STAINLESS STEEL SINKS
1. FIXTURES
   a. ELKAY
   b. JUST
   c. KOHLER
   d. ACORN
   e. ADVANCE TABCO

2. FAUCETS
   a. MOEN COMMERCIAL
   b. T&S BRASS
   c. CHICAGO FAUCET

D. STOP VALVES
1. BRASSCRAFT
2. WATTS
3. KINGSTON BRASS

E. URINALS
1. FIXTURES
   a. ACORN
   b. ADVANCE TABCO

2. FLUSH VALVES
   a. MOEN
   b. ZURN
   c. SLOAN

3. CARRIERS AND SUPPORTS
   a. ACORN
   b. JR SMITH
   c. ZURN

F. WATER CLOSETS
1. FIXTURES
   a. ACORN

2. FLUSH VALVES
   a. MOEN
   b. ZURN
   c. SLOAN

3. SEATS
   a. ACORN

4. CARRIERS AND SUPPORTS
   a. ACORN

b. JR SMITH
c. ZURN

2.2 GROUT

A. Standard: ASTM C 1107/C 1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.

B. Characteristics: Nonshrink; recommended for interior and exterior applications.

C. Design Mix: 5000-psi, 28-day compressive strength.

D. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install plumbing fixtures level and plumb according to roughing-in drawings.

B. Install floor-mounted water closets on closet flange attachments to drainage piping.

C. Install counter-mounting fixtures in and attached to casework.

D. Install pedestal lavatories on pedestals and secured to wood blocking in wall.

E. Install water-supply piping with stop on each supply to each fixture to be connected to water distribution piping. Attach supplies to supports or substrate within pipe spaces behind fixtures. Install stops in locations where they can be easily reached for operation.

1. Exception: Use ball, gate, or globe valves if supply stops are not specified with fixture. Comply with valve requirements specified in Section 220523 "General-Duty Valves for Plumbing Piping."

F. Install tanks for accessible, tank-type water closets with lever handle mounted on wide side of compartment.

G. Install toilet seats on water closets.

H. Install faucet flow-control fittings with specified flow rates and patterns in faucet spouts if faucets are not available with required rates and patterns. Include adapters if required.

I. Install shower flow-control fittings with specified maximum flow rates in shower arms.

J. Install traps on fixture outlets.

1. Exception: Omit trap on fixtures with integral traps.
2. Exception: Omit trap on indirect wastes unless otherwise indicated.

K. Install disposer in outlet of each sink indicated to have disposer. Install switch where indicated or in wall adjacent to sink if location is not indicated.

L. Install dishwasher air-gap fitting at each sink indicated to have air-gap fitting. Install in sink deck. Connect inlet hose to dishwasher and outlet hose to disposer.

M. Set bathtubs and shower receptors in leveling bed of cement grout.

N. Install protective shielding pipe covers and enclosures on exposed supplies and waste piping of accessible lavatories and sinks.

O. Install wall flanges or escutcheons at piping wall penetrations in exposed, finished locations. Use deep-pattern escutcheons if required to conceal protruding fittings.

P. Seal joints between plumbing fixtures, counters, floors, and walls using sanitary-type, one-part, mildew-resistant silicone sealant. Match sealant color to fixture color.

Q. The Plumbing contractor shall furnish a 24V control transformer to all hard wired optical/handsfree fixtures. The Plumbing contractor shall coordinate with the electrical contractor to install all line and low voltage wiring in compliance with section 260519 “Low-voltage Electrical Power Conductors and Cables”, and section 260523 “Control-Voltage Electrical Power Cables”.

3.2 CONNECTIONS

A. Connect fixtures with water supplies, stops, and risers, and with traps, soil, waste, and vent piping. Use size fittings required to match fixtures.

B. Comply with water piping requirements specified in Section 221116 "Domestic Water Piping."

C. Comply with soil and waste piping requirements specified in Section 221316 "Sanitary Waste and Vent Piping."

D. Install protective shielding pipe covers and enclosures on exposed supplies and waste piping of accessible lavatories and sinks.

E. All electrical connections shall be coordinated by the plumbing contractor with the electrical contractor.

3.3 ADJUSTING

A. Operate and adjust plumbing fixtures and controls. Replace damaged and malfunctioning fixtures, fittings, and controls.

B. Adjust water pressure at faucets to produce proper flow.

3.4 CLEANING AND PROTECTION

A. After completing installation of plumbing fixtures, inspect and repair damaged finishes.

B. Clean plumbing fixtures, faucets, and other fittings with manufacturers' recommended cleaning methods and materials.

C. Provide protective covering for installed plumbing fixtures and fittings.

D. Do not allow use of plumbing fixtures for temporary facilities unless approved in writing by Owner.

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Balancing Air Systems:

a. Constant-volume air systems.

1.2 DEFINITIONS

A. AABC: Associated Air Balance Council.

B. NEBB: National Environmental Balancing Bureau.

C. TAB: Testing, adjusting, and balancing.

D. TABB: Testing, Adjusting, and Balancing Bureau.

E. TAB Specialist: An independent entity meeting qualifications to perform TAB work.

F. TDH: Total dynamic head.

1.3 ACTION SUBMITTALS

A. See Section 220000 “General Requirement of Plumbing and HVAC” for submittal requirements

1.4 QUALITY ASSURANCE

A. TAB Specialists Qualifications: Certified by AABC, NEBB, TABB, or as approved by the Engineer prior to bidding.

B. Certify TAB field data reports and perform the following:

1. Review field data reports to validate accuracy of data and to prepare certified TAB reports.
2. Certify that the TAB team complied with the approved TAB plan and the procedures specified and referenced in this Specification.

C. TAB Report Forms: Use standard TAB contractor's forms.

D. Instrumentation Type, Quantity, Accuracy, and Calibration: Comply with requirements in ASHRAE 111, Section 4, "Instrumentation."

E. ASHRAE/IES 90.1 Compliance: Applicable requirements in ASHRAE/IES 90.1, Section 6.7.2.3 - "System Balancing.

PART 2 - EXECUTION

2.1 EXAMINATION

A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems designs that may preclude proper TAB of systems and equipment.

B. Examine installed systems for balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers. Verify that locations of these balancing devices are applicable for intended purpose and are accessible.

C. Examine the approved submittals for HVAC systems and equipment.

D. Examine HVAC equipment and verify that bearings are greased, belts are aligned and tight, filters are clean, and equipment with functioning controls is ready for operation.

E. Examine terminal units, such as variable-air-volume boxes, and verify that they are accessible and their controls are connected and functioning.

F. Examine control valves for proper installation for their intended function of throttling, diverting, or mixing fluid flows.

G. Examine heat-transfer coils for correct piping connections and for clean and straight fins.

H. Examine system pumps to ensure absence of entrained air in the suction piping.

I. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values.

2.2 PREPARATION

A. Perform system-readiness checks of HVAC systems and equipment to verify system readiness for TAB work. Include, at a minimum, the following:

1. Airside:

a. Duct systems are complete with terminals installed.
b. Volume, smoke, and fire dampers are open and functional.
c. Clean filters are installed.
d. Fans are operating, free of vibration, and rotating in correct direction.
e. Variable-frequency controllers' startup is complete and safeties are verified.
f. Automatic temperature-control systems are operational.
g. Ceilings are installed.
h. Windows and doors are installed.
i. Suitable access to balancing devices and equipment is provided.

2.3 GENERAL PROCEDURES FOR TESTING AND BALANCING

A. Perform testing and balancing procedures on each system according to the procedures contained in AABC's "National Standards for Total System Balance", NEBB's "Procedural

Standards for Testing, Adjusting, and Balancing of Environmental Systems" or SMACNA's "HVAC Systems - Testing, Adjusting, and Balancing" and in this Section.

B. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary for TAB procedures.

1. After testing and balancing, patch probe holes in ducts with plastic plugs.
2. Coordinate with the mechanical insulation contractor to Restore insulation, coverings, vapor barrier, and finish according to Section 230713 "Duct Insulation”

C. Mark equipment and balancing devices, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.

2.4 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Cross-check the summation of required outlet volumes with required fan volumes.

B. Prepare schematic diagrams of systems' "as-built" duct layouts.

C. For variable-air-volume systems, develop a plan to simulate diversity.

D. Determine the best locations in main and branch ducts for accurate duct-airflow measurements.

E. Check airflow patterns from the outdoor-air louvers and dampers and the return- and exhaust-air dampers through the supply-fan discharge and mixing dampers.

F. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.

G. Verify that motor starters are equipped with properly sized thermal protection.

H. Check dampers for proper position to achieve desired airflow path.

I. Check for airflow blockages.

J. Check condensate drains for proper connections and functioning.

K. Check for proper sealing of air-handling-unit components.

L. Verify that air duct system is sealed as specified in Section 233113 "Metal Ducts."

2.5 PROCEDURES FOR CONSTANT-VOLUME AIR SYSTEMS

A. Adjust fans to deliver total indicated airflows within the maximum allowable fan speed listed by fan manufacturer.

1. Measure total airflow.

a. Set outside-air, return-air, and relief-air dampers for proper position that simulates minimum outdoor-air conditions.

b. Where duct conditions allow, measure airflow by Pitot-tube traverse. If necessary, perform multiple Pitot-tube traverses to obtain total airflow.
c. Where duct conditions are not suitable for Pitot-tube traverse measurements, a coil traverse may be acceptable.
d. If a reliable Pitot-tube traverse or coil traverse is not possible, measure airflow at terminals and calculate the total airflow.

2. Measure fan static pressures as follows:

a. Measure static pressure directly at the fan outlet or through the flexible connection.
b. Measure static pressure directly at the fan inlet or through the flexible connection.
c. Measure static pressure across each component that makes up the air-handling system.
d. Report artificial loading of filters at the time static pressures are measured.

3. Review Record Documents to determine variations in design static pressures versus actual static pressures. Calculate actual system-effect factors. Recommend adjustments to accommodate actual conditions.
4. Obtain approval from Engineer for adjustment of fan speed higher or lower than indicated speed. Comply with requirements in HVAC Sections for air-handling units for adjustment of fans, belts, and pulley sizes to achieve indicated air-handling-unit performance.
5. Do not make fan-speed adjustments that result in motor overload. Consult equipment manufacturers about fan-speed safety factors. Modulate dampers and measure fan-motor amperage to ensure that no overload occurs. Measure amperage in full-cooling, full-heating, economizer, and any other operating mode to determine the maximum required brake horsepower.

B. Adjust volume dampers for main duct, submain ducts, and major branch ducts to indicated airflows.

1. Measure airflow of submain and branch ducts.
2. Adjust submain and branch duct volume dampers for specified airflow.
3. Re-measure each submain and branch duct after all have been adjusted.

C. Adjust air inlets and outlets for each space to indicated airflows.

1. Set airflow patterns of adjustable outlets for proper distribution without drafts.
2. Measure inlets and outlets airflow.
3. Adjust each inlet and outlet for specified airflow.
4. Re-measure each inlet and outlet after they have been adjusted.

2.6 TOLERANCES

A. Set HVAC system's airflow rates and water flow rates within the following tolerances:

1. Supply, Return, and Exhaust Fans and Equipment with Fans: Plus or minus 10 percent.
2. Air Outlets and Inlets: Plus or minus 10 percent.

B. Maintaining pressure relationships as designed shall have priority over the tolerances specified above.

2.7 FINAL REPORT

A. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems and balanced systems.

1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
2. Include a list of instruments used for procedures, along with proof of calibration.
3. Certify validity and accuracy of field data.

B. Final Report Contents: In addition to certified field-report data, include the following:
1. Manufacturers' test data.
2. Field test reports prepared by system and equipment installers.
3. Other information relative to equipment performance; do not include Shop Drawings and Product Data.

C. General Report Data: In addition to form titles and entries, include the following data:

1. Title page.
2. Name and address of the TAB specialist.
3. Project name.
4. Project location.
5. Architect's name and address.
6. Engineer's name and address.
7. Contractor's name and address.
8. Report date.
9. Signature of TAB supervisor who certifies the report.
10. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report.
11. Summary of contents including the following:

    a. Indicated versus final performance.
    b. Notable characteristics of systems.
    c. Description of system operation sequence if it varies from the Contract Documents.

12. Nomenclature sheets for each item of equipment.
13. Data for terminal units, including manufacturer's name, type, size, and fittings.
14. Notes to explain why certain final data in the body of reports vary from indicated values.
15. Test conditions for fans and pump performance forms including the following:

    a. Settings for outdoor-, return-, and exhaust-air dampers.
    b. Conditions of filters.
    c. Face and bypass damper settings at coils.
    d. Settings for supply-air, static-pressure controller.
    e. Other system operating conditions that affect performance.

D. Air-Handling-Unit Test Reports: For air-handling units with coils, include the following:

1. Unit Data:

    a. Unit identification.
    b. Location.
    c. Make and type.
    d. Model number and unit size.

e. Manufacturer's serial number.
f. Unit arrangement and class.
g. Discharge arrangement.
h. Sheave make, size in inches, and bore.
i. Center-to-center dimensions of sheave and amount of adjustments in inches.
j. Number, make, and size of belts.
k. Number, type, and size of filters.

2. Motor Data:

a. Motor make, and frame type and size.
b. Horsepower and rpm.
c. Volts, phase, and hertz.
d. Full-load amperage and service factor.
e. Sheave make, size in inches, and bore.
f. Center-to-center dimensions of sheave and amount of adjustments in inches.

3. Test Data (Indicated and Actual Values):

a. Total airflow rate in cfm.
b. Total system static pressure in inches wg.
c. Fan rpm.
d. Discharge static pressure in inches wg.
e. Filter static-pressure differential in inches wg.
f. Preheat-coil static-pressure differential in inches wg.
g. Cooling-coil static-pressure differential in inches wg.
h. Heating-coil static-pressure differential in inches wg.
i. Outdoor airflow in cfm.
j. Return airflow in cfm.
k. Outdoor-air damper position.
l. Return-air damper position.

E. Fan Test Reports: For supply, return, and exhaust fans, include the following:

1. Fan Data:

a. System identification.
b. Location.
c. Make and type.
d. Model number and size.
e. Manufacturer's serial number.
f. Arrangement and class.
g. Sheave make, size in inches, and bore.

2. Test Data (Indicated and Actual Values):

a. Total airflow rate in cfm.
b. Total system static pressure in inches wg.
c. Fan rpm.
d. Discharge static pressure in inches wg.
e. Suction static pressure in inches wg.

F. Air-Terminal-Device Reports:

1. Unit Data:

a. System and air-handling unit identification.
b. Location and zone.
c. Apparatus used for test.
d. Area served.
e. Make.
f. Number from system diagram.
g. Type and model number.
h. Size.

2. Test Data (Indicated and Actual Values):

a. Airflow rate in cfm.
b. Air velocity in fpm.
c. Preliminary airflow rate as needed in cfm.
d. Preliminary velocity as needed in fpm.
e. Final airflow rate in cfm.
f. Final velocity in fpm.

2.8 DUCT TESTING

A. Duct Testing is required for supply, return or exhaust ductwork that will operate at 3 inWC static pressure or greater.

B. Leakage test procedures shall follow the outlines and classifications in the SMANCA HVAC Air Duct Leakage Test Manual.

C. The Owner and mechanical engineer shall select sections of ductwork from each air handling system for duct leakage testing. The sample shall include at least five transverse joints, typical seams, and access door connections. The sample will include all medium pressure supply ductwork between the air handling unit to within 2’ of the connection to variable air volume terminal units.

D. The Air handling systems shall be tested at 3 inches w.g. and shall meet leakage Class 3.

E. If a section fails to meet allotted leakage level, the contractor shall modify the ductwork to bring it into compliance and shall retest the section until acceptable leakage is demonstrated. One retest shall will be provided by the TAB contractor. The mechanical contractor shall pay the TAB contractor for any additional retesting required.

F. All testing and necessary repairs shall be completed prior to concealment of the ductwork.

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

A. Section includes insulating the following duct services:

1. Indoor, Duct Insulation.

B. Related Sections:

1. Section 220716 "Plumbing and HVAC Equipment and Piping Insulation."
2. Section 233113 "Metal Ducts" for duct liners.

1.2 ACTION SUBMITTALS

A. See Section 220000 “General Requirements of Plumbing and HVAC” for submittal requirements.

1.3 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.4 QUALITY ASSURANCE

A. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84, by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.

1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. Comply with requirements in "Duct Insulation Schedule, General," "Indoor Duct and Plenum Insulation Schedule," and "Aboveground, Outdoor Duct and Plenum Insulation Schedule" articles for where insulating materials shall be applied.

B. Products shall not contain asbestos, lead, mercury, or mercury compounds.

C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

E. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.

F. Mineral-Fiber Blanket Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II and ASTM C 1290, Type III with factory-applied FSK jacket. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. CertainTeed Corporation.
b. Johns Manville; a Berkshire Hathaway company.
c. Knauf Insulation.
d. Owens Corning.

G. Jacketed Mineral-Fiber Board Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 612, Type IA or Type IB. For duct and plenum applications, provide insulation with factory-applied ASJ. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. CertainTeed Corporation.
b. Johns Manville; a Berkshire Hathaway company.
c. Knauf Insulation.
d. Owens Corning.

H. Mineral-Fiber Board Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 612, Type IA or Type IB. For duct and plenum applications, provide insulation without factory-applied jacket. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. CertainTeed Corporation.
b. Johns Manville; a Berkshire Hathaway company.
c. Knauf Insulation.
d. Owens Corning.

2.2 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.

B. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.

C. ASJ Adhesive, and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.

2.3 MASTICS

A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-PRF-19565C, Type II.

B. Vapor-Barrier Mastic: Water based; suitable for indoor use on below ambient services.
1. Water-Vapor Permeance: ASTM E 96/E 96M, Procedure B, 0.013 perm at 43-mil dry film thickness.
2. Service Temperature Range: Minus 20 to plus 180 deg F.
3. Solids Content: ASTM D 1644, 58 percent by volume and 70 percent by weight.
4. Color: White.

C. Breather Mastic: Water based; suitable for indoor and outdoor use on above ambient services.
1. Water-Vapor Permeance: ASTM F 1249, 1.8 perms at 0.0625-inch dry film thickness.
2. Service Temperature Range: Minus 20 to plus 180 deg F.
3. Solids Content: 60 percent by volume and 66 percent by weight.
4. Color: White.

2.4 SEALANTS

A. FSK and Metal Jacket Flashing Sealants:
1. Materials shall be compatible with insulation materials, jackets, and substrates.
2. Fire- and water-resistant, flexible, elastomeric sealant.
3. Service Temperature Range: Minus 40 to plus 250 deg F.
4. Color: Aluminum.

B. ASJ Flashing Sealants, and Vinyl and PVC Jacket Flashing Sealants:
1. Materials shall be compatible with insulation materials, jackets, and substrates.
2. Fire- and water-resistant, flexible, elastomeric sealant.
3. Service Temperature Range: Minus 40 to plus 250 deg F.
4. Color: White.

2.5 FACTORY-APPLIED JACKETS

A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:

1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C 1136, Type I.
2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C 1136, Type I.
3. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C 1136, Type II.

2.6 FIELD-APPLIED JACKETS

A. Self-Adhesive Outdoor Jacket: 60-mil-thick, laminated vapor barrier and waterproofing membrane for installation over insulation located aboveground outdoors; consisting a rubberized bitumen compound; heat applied to a multi-ply embossed UV-resistant aluminum foil/polymer laminate, and polyester/foil multiple layer laminate with acrylic adhesive.

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
   a. Polyguard Products, Inc.
   b. Prior Approved Equal

2.7 TAPES

A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.
   1. Width: 3 inches.
   2. Thickness: 11.5 mils.
   3. Adhesion: 90 ounces force/inch in width.
   4. Elongation: 2 percent.
   5. Tensile Strength: 40 lbf/inch in width.
   6. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.

B. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C 1136.
   1. Width: 3 inches.
   2. Thickness: 6.5 mils.
   3. Adhesion: 90 ounces force/inch in width.
   4. Elongation: 2 percent.
   5. Tensile Strength: 40 lbf/inch in width.
   6. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.

C. Aluminum-Foil Tape: Vapor-retarder tape with acrylic adhesive.
   1. Width: 2 inches.
   2. Thickness: 3.7 mils.
   3. Adhesion: 100 ounces force/inch in width.
   4. Elongation: 5 percent.
   5. Tensile Strength: 34 lbf/inch in width.

2.8 SECUREMENTS

A. Cupped Head Weld Pins:
   1. Material: Low carbon steel.
   2. Finish: Copper coated pins with galvanized washer
   3. Pin gauge: 12 Ga.

B. Staples: Outward-clinching insulation staples, nominal 3/4-inch-wide, stainless steel or Monel.

C. Wire: 0.080-inch nickel-copper alloy.

PART 3 - **EXECUTION**

3.1 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

3.2 GENERAL INSTALLATION REQUIREMENTS

A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of ducts and fittings.

B. Install insulation materials, vapor barriers or retarders, jackets, and thicknesses required for each item of duct system as specified in insulation system schedules.

C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

D. Install insulation with longitudinal seams at top and bottom of horizontal runs.

E. Install multiple layers of insulation with longitudinal and end seams staggered.

F. Keep insulation materials dry during application and finishing.

G. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.

H. Install insulation with least number of joints practical.

I. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.

1. Install insulation continuously through hangers and around anchor attachments.
2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.

J. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.

K. Install insulation with factory-applied jackets as follows:

1. Draw jacket tight and smooth.
2. Cover circumferential joints with 3-inch-wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
3. Overlap jacket longitudinal seams at least 1-1/2 inches. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 4 inches o.c.

    a. For below ambient services, apply vapor-barrier mastic over staples.

4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to duct flanges and fittings.

L. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.

M. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

N. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

3.3 PENETRATIONS

A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
4. Seal jacket to roof flashing with flashing sealant.

B. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
4. Seal jacket to wall flashing with flashing sealant.

C. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.

D. Insulation Installation at Fire-Rated Wall and Partition Penetrations: Terminate insulation at fire damper sleeves for fire-rated wall and partition penetrations. Externally insulate damper sleeves to match adjacent insulation and overlap duct insulation at least 2 inches.

1. Comply with requirements in Section 078413 "Penetration Firestopping" for firestopping and fire-resistive joint sealers.

E. Insulation Installation at Floor Penetrations:

1. Duct: For penetrations through fire-rated assemblies, terminate insulation at fire damper sleeves and externally insulate damper sleeve beyond floor to match adjacent duct insulation. Overlap damper sleeve and duct insulation at least 2 inches.
2. Seal penetrations through fire-rated assemblies. Comply with requirements in Section 078413 "Penetration Firestopping."

3.4 INSTALLATION OF MINERAL-FIBER INSULATION

A. Blanket Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.

1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 100 percent coverage of duct and plenum surfaces.
2. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.
3. Install cupped-head, capacitor-discharge-weld pins on sides and bottom of horizontal ducts and sides of vertical ducts as follows:

    a. On duct sides with dimensions 18 inches and smaller, place pins along longitudinal centerline of duct. Space 3 inches maximum from insulation end joints, and 16 inches o.c.
    b. On duct sides with dimensions larger than 18 inches, place pins 16 inches o.c. each way, and 3 inches maximum from insulation joints. Install additional pins to hold insulation tightly against surface at cross bracing.
    c. Pins may be omitted from top surface of horizontal, rectangular ducts and plenums.
    d. Do not overcompress insulation during installation.
    e. Impale insulation over pins and attach speed washers.
    f. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.

4. For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from one edge and one end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch outward-clinching staples, 1 inch o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-barrier mastic, and sealant at joints, seams, and protrusions.

    a. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.
    b. Install vapor stops for ductwork and plenums operating below 50 deg F at 18-foot intervals. Vapor stops shall consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt end of insulation, and over the surface. Cover insulation face and surface to be insulated a width equal to two times the insulation thickness, but not less than 3 inches.

5. Overlap unfaced blankets a minimum of 2 inches on longitudinal seams and end joints. At end joints, secure with steel bands spaced a maximum of 18 inches o.c.
6. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.
7. Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch-wide strips of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins spaced 6 inches o.c.

B. Board Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.

1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 100 percent coverage of duct and plenum surfaces.
2. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.

3. Install either capacitor-discharge-weld pins and speed washers or cupped-head, capacitor-discharge-weld pins on sides and bottom of horizontal ducts and sides of vertical ducts as follows:

    a. On duct sides with dimensions 18 inches and smaller, place pins along longitudinal centerline of duct. Space 3 inches maximum from insulation end joints, and 16 inches o.c.
    b. On duct sides with dimensions larger than 18 inches, space pins 16 inches o.c. each way, and 3 inches maximum from insulation joints. Install additional pins to hold insulation tightly against surface at cross bracing.
    c. Pins may be omitted from top surface of horizontal, rectangular ducts and plenums.
    d. Do not overcompress insulation during installation.
    e. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.

4. For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from one edge and one end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch outward-clinching staples, 1 inch o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-barrier mastic, and sealant at joints, seams, and protrusions.

    a. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.
    b. Install vapor stops for ductwork and plenums operating below 50 deg F at 18-foot intervals. Vapor stops shall consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt end of insulation, and over the surface. Cover insulation face and surface to be insulated a width equal to two times the insulation thickness, but not less than 3 inches.

5. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Groove and score insulation to fit as closely as possible to outside and inside radius of elbows. Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.
6. Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch-wide strips of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins spaced 6 inches o.c.

3.5 FINISHES

A. Insulation with ASJ or Other Paintable Jacket Material: Paint jacket with paint system identified below and as specified in Section 099113 "Exterior Painting" and Section 099123 "Interior Painting."

B. Color: Final color as selected by Architect. Vary first and second coats to allow visual inspection of the completed Work.

C. Do not field paint outdoor ductwork.

3.6 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Tests and Inspections:

1. Inspect ductwork, randomly selected by engineer, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to one location(s) for each duct system defined in the "Duct Insulation Schedule, General" Article.

C. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.7 DUCT INSULATION SCHEDULE, GENERAL

A. Duct insulation shall not be installed on any indoor, supply or return ductwork that is exposed to view unless otherwise indicated on the drawings.

B. Insulation materials and thicknesses for ductwork are identified in the table below. If more than one material is listed for an application, selection from materials listed is at the Contractor's option. Ductwork that is not listed below or is exposed to view shall not be insulated.

Application	Insulation Type	Installed R-Value	Vapor Barrier	Factory Installed Jacket Type
Indoor Supply	Mineral-Fiber Blanket	6	YES	FSK
Indoor Exhaust *	Mineral-Fiber Blanket	8	YES	FSK
Indoor Fresh Air	Mineral-Fiber Board	8	YES	FSK

*Indoor Exhaust Ductwork shall be insulated from the penetration of the building envelope to 10ft upstream of a backdraft of shutoff damper.

3.8 FIELD APPLIED JACKETING SCHEDULE

A. Field applied jackets for Plumbing and HVAC piping are identified in the table below. If more than one material is listed for an application, selection from materials listed is at the Contractor's option.

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Refrigerant pipes and fittings.
2. Refrigerant piping valves and specialties.
3. Refrigerants.

1.2 SUBMITTALS

A. See Section 220000 “General Requirements of Plumbing and HVAC”

B. Shop Drawings:

1. Show piping size and piping layout, including oil traps, double risers, specialties, and pipe and tube sizes to accommodate, as a minimum, equipment provided, elevation difference between compressor and evaporator, and length of piping to ensure proper operation and compliance with warranties of connected equipment.
2. Show interface and spatial relationships between piping and equipment.
3. Shop Drawing Scale: 1/4 inch equals 1 foot or 1/8 in equal 1 foot.

1.3 QUALITY ASSURANCE

A. Comply with ASHRAE 15, "Safety Code for Refrigeration Systems."

B. Comply with ASME B31.5, "Refrigeration Piping and Heat Transfer Components."

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Line Test Pressure for Refrigerant R-410A:

1. Suction Lines for Air-Conditioning Applications: 300 psig.
2. Suction Lines for Heat-Pump Applications: 535 psig.
3. Hot-Gas and Liquid Lines: 535 psig.

2.2 COPPER TUBE AND FITTINGS

A. Copper Tube: ASTM B 280, Type ACR.

B. Wrought-Copper Fittings: ASME B16.22.

C. Wrought-Copper Unions: ASME B16.22.

D. Solder Filler Metals: ASTM B 32. Use 95-5 tin antimony or alloy HB solder to join copper socket fittings on copper pipe.

E. Brazing Filler Metals: AWS A5.8/A5.8M.

F. Flexible Connectors:

1. Body: Tin-bronze bellows with woven, flexible, tinned-bronze-wire-reinforced protective jacket.
2. End Connections: Socket ends.
3. Offset Performance: Capable of minimum 3/4-inch misalignment in minimum 7-inch-long assembly.
4. Working Pressure Rating: Factory test at minimum 500 psig.
5. Maximum Operating Temperature: 250 deg F.

2.3 VALVES AND SPECIALTIES

A. Diaphragm Packless Valves:
1. Body and Bonnet: Forged brass or cast bronze; globe design with straight-through or angle pattern.
2. Diaphragm: Phosphor bronze and stainless steel with stainless-steel spring.
3. Operator: Rising stem and hand wheel.
4. Seat: Nylon.
5. End Connections: Socket, union, or flanged.
6. Working Pressure Rating: 500 psig.
7. Maximum Operating Temperature: 275 deg F.

B. Packed-Angle Valves:
1. Body and Bonnet: Forged brass or cast bronze.
2. Packing: Molded stem, back seating, and replaceable under pressure.
3. Operator: Rising stem.
4. Seat: Nonrotating, self-aligning polytetrafluoroethylene.
5. Seal Cap: Forged-brass or valox hex cap.
6. End Connections: Socket, union, threaded, or flanged.
7. Working Pressure Rating: 500 psig.
8. Maximum Operating Temperature: 275 deg F.

C. Check Valves:
1. Body: Ductile iron, forged brass, or cast bronze; globe pattern.
2. Bonnet: Bolted ductile iron, forged brass, or cast bronze; or brass hex plug.
3. Piston: Removable polytetrafluoroethylene seat.
4. Closing Spring: Stainless steel.
5. Manual Opening Stem: Seal cap, plated-steel stem, and graphite seal.
6. End Connections: Socket, union, threaded, or flanged.
7. Maximum Opening Pressure: 0.50 psig.
8. Working Pressure Rating: 500 psig.
9. Maximum Operating Temperature: 275 deg F.

D. Service Valves:
1. Body: Forged brass with brass cap including key end to remove core.
2. Core: Removable ball-type check valve with stainless-steel spring.
3. Seat: Polytetrafluoroethylene.
4. End Connections: Copper spring.
5. Working Pressure Rating: 500 psig.

E. Solenoid Valves: Comply with AHRI 760 and UL 429; listed and labeled by a National Recognized Testing Laboratory (NRTL).
1. Body and Bonnet: Plated steel.
2. Solenoid Tube, Plunger, Closing Spring, and Seat Orifice: Stainless steel.
3. Seat: Polytetrafluoroethylene.
4. End Connections: Threaded.
5. Electrical: Molded, watertight coil in NEMA 250 enclosure of type required by location with 1/2-inch conduit adapter, and 24, 115, or 208-V ac coil as required by the installation.
6. Working Pressure Rating: 400 psig.
7. Maximum Operating Temperature: 240 deg F.

F. Safety Relief Valves: Comply with 2010 ASME Boiler and Pressure Vessel Code; listed and labeled by an NRTL.
1. Body and Bonnet: Ductile iron and steel, with neoprene O-ring seal.
2. Piston, Closing Spring, and Seat Insert: Stainless steel.
3. Seat: Polytetrafluoroethylene.
4. End Connections: Threaded.
5. Working Pressure Rating: 400 psig.
6. Maximum Operating Temperature: 240 deg F.

G. Thermostatic Expansion Valves: Comply with AHRI 750.
1. Body, Bonnet, and Seal Cap: Forged brass or steel.
2. Diaphragm, Piston, Closing Spring, and Seat Insert: Stainless steel.
3. Packing and Gaskets: Non-asbestos.
4. Capillary and Bulb: Copper tubing filled with refrigerant charge.
5. Suction Temperature: 40 deg F.
6. Superheat: Adjustable.
7. Reverse-flow option (for heat-pump applications).
8. End Connections: Socket, flare, or threaded union.
9. Working Pressure Rating: 700 psig.

H. Hot-Gas Bypass Valves: Comply with UL 429; listed and labeled by an NRTL.
1. Body, Bonnet, and Seal Cap: Ductile iron or steel.
2. Diaphragm, Piston, Closing Spring, and Seat Insert: Stainless steel.
3. Packing and Gaskets: Non-asbestos.
4. Solenoid Tube, Plunger, Closing Spring, and Seat Orifice: Stainless steel.
5. Seat: Polytetrafluoroethylene.
6. Equalizer: Internal or External.
7. Electrical: Molded, watertight coil in NEMA 250 enclosure of type required by location with 1/2-inch conduit adapter and 24, 115, or 208-V ac coil as required for the application.
8. End Connections: Socket.
9. Set Pressure: Field Verify.
10. Throttling Range: Maximum 5 psig.
11. Working Pressure Rating: 500 psig.
12. Maximum Operating Temperature: 240 deg F.

I. Straight-Type Strainers:
1. Body: Welded steel with corrosion-resistant coating.
2. Screen: 100-mesh stainless steel.
3. End Connections: Socket or flare.
4. Working Pressure Rating: 500 psig.
5. Maximum Operating Temperature: 275 deg F.

J. Angle-Type Strainers:
1. Body: Forged brass or cast bronze.

2. Drain Plug: Brass hex plug.
3. Screen: 100-mesh monel.
4. End Connections: Socket or flare.
5. Working Pressure Rating: 500 psig.
6. Maximum Operating Temperature: 275 deg F.

K. Moisture/Liquid Indicators:
1. Body: Forged brass.
2. Window: Replaceable, clear, fused glass window with indicating element protected by filter screen.
3. Indicator: Color coded to show moisture content in parts per million (ppm).
4. Minimum Moisture Indicator Sensitivity: Indicate moisture above 60 ppm.
5. End Connections: Socket or flare.
6. Working Pressure Rating: 500 psig.
7. Maximum Operating Temperature: 240 deg F.

L. Replaceable-Core Filter Dryers: Comply with AHRI 730.
1. Body and Cover: Painted-steel shell with ductile-iron cover, stainless-steel screws, and neoprene gaskets.
2. Filter Media: 10 micron, pleated with integral end rings; stainless-steel support.
3. Desiccant Media: High moisture capacity.
4. Designed for reverse flow (for heat-pump applications).
5. End Connections: Socket.
6. Access Ports: NPS 1/4 connections at entering and leaving sides for pressure differential measurement.
7. Working Pressure Rating: 500 psig.
8. Maximum Operating Temperature: 240 deg F.

M. Permanent Filter Dryers: Comply with AHRI 730.
1. Body and Cover: Painted-steel shell.
2. Filter Media: 10 micron, pleated with integral end rings; stainless-steel support.
3. Desiccant Media: High Moisture capacity.
4. Designed for reverse flow (for heat-pump applications).
5. End Connections: Socket.
6. Access Ports: NPS 1/4 connections at entering and leaving sides for pressure differential measurement.
7. Working Pressure Rating: 500 psig.
8. Maximum Operating Temperature: 240 deg F.

2.4 REFRIGERANTS

A. ASHRAE 34, R-410A: Pentafluoroethane/Difluoromethane.

PART 3 - EXECUTION

3.1 PIPING APPLICATIONS FOR REFRIGERANT R-410A

A. Suction Lines: Copper, Type ACR, annealed-temper tubing and wrought-copper fittings with brazed joints.

B. Hot-Gas and Liquid Lines, and Suction Lines for Heat-Pump Applications: Copper, Type ACR, annealed- or drawn-temper tubing and wrought-copper fittings with brazed joints.

C. Hot-Gas and Liquid Lines, and Suction Lines for Heat-Pump Applications: Copper, Type K, annealed- or drawn-temper tubing and wrought-copper fittings with brazed joints.

D. Hot-Gas and Liquid Lines, and Suction Lines for Heat-Pump Applications: Copper, Type ACR, drawn-temper tubing and wrought-copper fittings with 95-5 tin-antimony soldered joints.

E. Hot-Gas and Liquid Lines, and Suction Lines for Heat-Pump Applications: Copper, Type ACR, drawn-temper tubing and wrought-copper fittings with Alloy HB soldered joints.

F. Safety-Relief-Valve Discharge Piping: Copper, Type ACR, annealed- or drawn-temper tubing and wrought-copper fittings with brazed or soldered joints.

G. Safety-Relief-Valve Discharge Piping: Copper, Type K, annealed- or drawn-temper tubing and wrought-copper fittings with brazed or soldered joints.

H. Safety-Relief-Valve Discharge Piping: Copper, Type ACR, drawn-temper tubing and wrought-copper fittings with 95-5 tin-antimony soldered joints.

I. Safety-Relief-Valve Discharge Piping: Copper, Type ACR, drawn-temper tubing and wrought-copper fittings with Alloy HB soldered joints.

3.2 VALVE AND SPECIALTY APPLICATIONS

A. Install diaphragm packless valves in suction and discharge lines of compressor.

B. Install service valves for gage taps at inlet and outlet of hot-gas bypass valves and strainers if they are not an integral part of valves and strainers.

C. Install a check valve at the compressor discharge and a liquid accumulator at the compressor suction connection.

D. Except as otherwise indicated, install diaphragm packless valves on inlet and outlet side of filter dryers.

E. Install a full-size, three-valve bypass around filter dryers.

F. Install solenoid valves upstream from each expansion valve and hot-gas bypass valve. Install solenoid valves in horizontal lines with coil at top.

G. Install thermostatic expansion valves as close as possible to distributors on evaporators.

1. Install valve so diaphragm case is warmer than bulb.
2. Secure bulb to clean, straight, horizontal section of suction line using two bulb straps. Do not mount bulb in a trap or at bottom of the line.
3. If external equalizer lines are required, make connection where it will reflect suction-line pressure at bulb location.

H. Install safety relief valves where required by 2010 ASME Boiler and Pressure Vessel Code. Pipe safety-relief-valve discharge line to outside according to ASHRAE 15.

I. Install moisture/liquid indicators in liquid line at the inlet of the thermostatic expansion valve or at the inlet of the evaporator coil capillary tube.

J. Install strainers upstream from and adjacent to the following unless they are furnished as an integral assembly for the device being protected:

1. Solenoid valves.
2. Thermostatic expansion valves.
3. Hot-gas bypass valves.
4. Compressor.

K. Install filter dryers in liquid line between compressor and thermostatic expansion valve, and in the suction line at the compressor.

L. Install receivers sized to accommodate pump-down charge.

M. Install flexible connectors at compressors.

3.3 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems; indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Shop Drawings.

B. Install refrigerant piping according to ASHRAE 15.

C. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.

D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

E. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

F. Install piping adjacent to machines to allow service and maintenance.

G. Install piping free of sags and bends.

H. Install fittings for changes in direction and branch connections.

I. Select system components with pressure rating equal to or greater than system operating pressure.

J. Refer to Section 230923 "Direct Digital Control (DDC) System for HVAC" and Section 230993.11 "Sequence of Operations for HVAC DDC" for solenoid valve controllers, control wiring, and sequence of operation.

K. Install piping as short and direct as possible, with a minimum number of joints, elbows, and fittings.

L. Arrange piping to allow inspection and service of refrigeration equipment. Install valves and specialties in accessible locations to allow for service and inspection. Install access doors or panels as specified in Section 083113 "Access Doors and Frames" if valves or equipment requiring maintenance is concealed behind finished surfaces.

M. Install refrigerant piping in protective conduit where installed belowground.

N. Install refrigerant piping in rigid or flexible conduit in locations where exposed to mechanical injury.

O. Slope refrigerant piping as follows:

1. Install horizontal hot-gas discharge piping with a uniform slope downward away from compressor.
2. Install horizontal suction lines with a uniform slope downward to compressor.
3. Install traps and double risers to entrain oil in vertical runs.
4. Liquid lines may be installed level.

P. When brazing or soldering, remove solenoid-valve coils and sight glasses; also remove valve stems, seats, and packing, and accessible internal parts of refrigerant specialties. Do not apply heat near expansion-valve bulb.

Q. Install piping with adequate clearance between pipe and adjacent walls and hangers or between pipes for insulation installation.

R. Identify refrigerant piping and valves according to Section 220553 "Identification for Plumbing and HVAC Piping and Equipment."

S. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 220500 "General Provisions of Plumbing and HVAC."

T. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 220500 "General Provisions of Plumbing and HVAC."

U. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 220500 "General Provisions of Plumbing and HVAC."

3.4 PIPE JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs.

B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

C. Soldered Joints: Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook."

D. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," Chapter "Pipe and Tube."

1. Use Type BCuP (copper-phosphorus) alloy for joining copper socket fittings with copper pipe.
2. Use Type BAg (cadmium-free silver) alloy for joining copper with bronze or steel.

3.5 HANGERS AND SUPPORTS

A. Comply with requirements for pipe hangers and supports specified in Section 230529 "Hangers and Supports for HVAC Piping and Equipment."

B. Install the following pipe attachments:

1. Adjustable steel clevis hangers for individual horizontal runs less than 20 feet long.
2. Roller hangers and spring hangers for individual horizontal runs 20 feet or longer.
3. Pipe Roller: MSS SP-58, Type 44 for multiple horizontal piping 20 feet or longer, supported on a trapeze.
4. Spring hangers to support vertical runs.
5. Copper-clad hangers and supports for hangers and supports in direct contact with copper pipe.

C. Install hangers for copper tubing with the following maximum spacing and minimum rod diameters:

1. NPS 1/2: Maximum span, 60 inches; minimum rod, 1/4 inch.
2. NPS 5/8: Maximum span, 60 inches; minimum rod, 1/4 inch.
3. NPS 1: Maximum span, 72 inches; minimum rod, 1/4 inch.
4. NPS 1-1/4: Maximum span, 96 inches; minimum rod, 3/8 inch.
5. NPS 1-1/2: Maximum span, 96 inches; minimum rod, 3/8 inch.
6. NPS 2: Maximum span, 96 inches; minimum rod, 3/8 inch.
7. NPS 2-1/2: Maximum span, 108 inches; minimum rod, 3/8 inch.
8. NPS 3: Maximum span, 10 feet; minimum rod, 3/8 inch.
9. NPS 4: Maximum span, 12 feet; minimum rod, 1/2 inch.

D. Support multifloor vertical runs at least at each floor.

3.6 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Comply with ASME B31.5, Chapter VI.
2. Test refrigerant piping, specialties, and receivers. Isolate compressor, condenser, evaporator, and safety devices from test pressure if they are not rated above the test pressure.
3. Test high- and low-pressure side piping of each system separately at not less than the pressures indicated in "Performance Requirements" Article.

    a. Fill system with nitrogen to the required test pressure.
    b. System shall maintain test pressure at the manifold gage throughout duration of test.
    c. Test joints and fittings with electronic leak detector or by brushing a small amount of soap and glycerin solution over joints.
    d. Remake leaking joints using new materials, and retest until satisfactory results are achieved.

B. Prepare test and inspection reports.

3.7 SYSTEM CHARGING

A. Charge system using the following procedures:

1. Install core in filter dryers after leak test but before evacuation.
2. Evacuate entire refrigerant system with a vacuum pump to 500 micrometers. If vacuum holds for 12 hours, system is ready for charging.
3. Break vacuum with refrigerant gas, allowing pressure to build up to 2 psig.
4. Charge system with a new filter-dryer core in charging line.

3.8 ADJUSTING

A. Adjust thermostatic expansion valve to obtain proper evaporator superheat.

B. Adjust high- and low-pressure switch settings to avoid short cycling in response to fluctuating suction pressure.

C. Adjust set-point temperature of air-conditioning or chilled-water controllers to the system design temperature.

D. Perform the following adjustments before operating the refrigeration system, according to manufacturer's written instructions:

1. Open shutoff valves in condenser water circuit.
2. Verify that compressor oil level is correct.
3. Open compressor suction and discharge valves.
4. Open refrigerant valves except bypass valves that are used for other purposes.
5. Check open compressor-motor alignment and verify lubrication for motors and bearings.

E. Replace core of replaceable filter dryer after system has been adjusted and after design flow rates and pressures are established.

END OF SECTION

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PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Rectangular ducts and fittings.
2. Round ducts and fittings.
3. Sheet metal materials.
4. Sealants and gaskets.
5. Hangers and supports.
6. Seismic-restraint devices.

B. Related Sections:
1. Section 220529 “Hangars and Supports for Plumbing and HVAC Piping and Equipment.”
2. Section 220548 “Vibration and Seismic Controls for Plumbing and HVAC Piping and Equipment”
3. Section 230593 "Testing, Adjusting, and Balancing for HVAC" for testing, adjusting, and balancing requirements for metal ducts.
4. Section 233300 "Air Duct Accessories" for dampers, sound-control devices, duct-mounting access doors and panels, turning vanes, and flexible ducts.

C. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ANSI/ASHRAE 62.1.

1.2 SUBMITTALS

A. See Section 220000 “General Requirements of Plumbing and HVAC” for submittal requirements.

1.3 QUALITY ASSURANCE

A. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 5 - "Systems and Equipment" and Section 7 - "Construction and System Start-up."

B. ASHRAE/IES Compliance: Applicable requirements in ASHRAE/IES 90.1, Section 6.4.4 - "HVAC System Construction and Insulation."

PART 2 - PRODUCTS

2.1 RECTANGULAR DUCTS AND FITTINGS

A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.

B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-1, "Rectangular Duct/Transverse Joints,"

for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-2, "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

D. Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 4, "Fittings and Other Construction," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.2 ROUND DUCTS AND FITTINGS

A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 3, "Round, Oval, and Flexible Duct," based on indicated static-pressure class unless otherwise indicated.

B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-1, "Round Duct Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

1. Transverse Joints in Ducts Larger Than 24 in Diameter: Flanged.

C. Tees and Laterals: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.3 SHEET METAL MATERIALS

A. General Material Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

B. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.

1. Galvanized Coating Designation: G90.
2. Finishes for Surfaces Exposed to View: Mill phosphatized.

C. Carbon-Steel Sheets: Comply with ASTM A 1008/A 1008M, with oiled, matte finish for exposed ducts.

D. Stainless-Steel Sheets: Comply with ASTM A 480/A 480M, Type 304 or 316, as indicated in the "Duct Schedule" Article; cold rolled, annealed, sheet. Exposed surface finish shall be No. 2B, No. 2D, No. 3, or No. 4 as indicated in the "Duct Schedule" Article.

E. Aluminum Sheets: Comply with ASTM B 209 Alloy 3003, H14 temper; with mill finish for concealed ducts, and standard, one-side bright finish for duct surfaces exposed to view.

F. Reinforcement Shapes and Plates: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

1. Where black- and galvanized-steel shapes and plates are used to reinforce aluminum ducts, isolate the different metals with butyl rubber, neoprene, or EPDM gasket materials.

G. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.4 SEALANT AND GASKETS

A. General Sealant and Gasket Requirements: Surface-burning characteristics for sealants and gaskets shall be a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.

B. Water-Based Joint and Seam Sealant:

1. Application Method: Brush on.
2. Solids Content: Minimum 65 percent.
3. Shore A Hardness: Minimum 20.
4. Water resistant.
5. Mold and mildew resistant.
6. VOC: Maximum 75 g/L (less water).
7. Maximum Static-Pressure Class: 10-inch wg, positive and negative.
8. Service: Indoor or outdoor.
9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.

C. Flanged Joint Sealant: Comply with ASTM C 920.

1. General: Single-component, acid-curing, silicone, elastomeric.
2. Type: S.
3. Grade: NS.
4. Class: 25.
5. Use: O.
6. For indoor applications, sealant shall have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
7. Sealant shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

D. Flange Gaskets: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.

E. Round Duct Joint O-Ring Seals:

1. Seal shall provide maximum leakage class of 3 cfm/100 sq. ft. at 1-inch wg and shall be rated for10-inch wg static-pressure class, positive or negative.

2. EPDM O-ring to seal in concave bead in coupling or fitting spigot.
3. Double-lipped, EPDM O-ring seal, mechanically fastened to factory-fabricated couplings and fitting spigots.

2.5 HANGERS AND SUPPORTS

A. Hanger Rods for Noncorrosive Environments: Cadmium-plated steel rods and nuts.

B. Hanger Rods for Corrosive Environments: Electrogalvanized, all-thread rods or galvanized rods with threads painted with zinc-chromate primer after installation.

C. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct."

D. Steel Cables for Galvanized-Steel Ducts: Galvanized steel complying with ASTM A 603.

E. Steel Cables for Stainless-Steel Ducts: Stainless steel complying with ASTM A 492.

F. Steel Cable End Connections: Cadmium-plated steel assemblies with brackets, swivel, and bolts designed for duct hanger service; with an automatic-locking and clamping device.

G. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.

H. Trapeze and Riser Supports:

1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.
2. Supports for Stainless-Steel Ducts: Stainless-steel shapes and plates.
3. Supports for Aluminum Ducts: Aluminum or galvanized steel coated with zinc chromate.

PART 3 - EXECUTION

3.1 DUCT INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and Coordination Drawings.

B. Install ducts according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.

C. Install ducts in maximum practical lengths.

D. Install ducts with fewest possible joints.

E. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch connections.

F. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.

G. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.

H. Install ducts with a clearance of 1 inch, plus allowance for insulation thickness.

I. Route ducts to avoid passing through transformer vaults and electrical equipment rooms and enclosures.

J. Where ducts pass through non-fire-rated interior partitions and exterior walls and are exposed to view, cover the opening between the partition and duct or duct insulation with sheet metal flanges of same metal thickness as the duct. Overlap openings on four sides by at least 1-1/2 inches.

K. Where ducts pass through fire-rated interior partitions and exterior walls, install fire dampers. Comply with requirements in Section 233300 "Air Duct Accessories" for fire and smoke dampers.

L. Protect duct interiors from moisture, construction debris and dust, and other foreign materials. Comply with SMACNA's "IAQ Guidelines for Occupied Buildings Under Construction," Appendix G, "Duct Cleanliness for New Construction Guidelines."

3.2 INSTALLATION OF EXPOSED DUCTWORK

A. Protect ducts exposed in finished spaces from being dented, scratched, or damaged.

B. Trim duct sealants flush with metal. Create a smooth and uniform exposed bead. Do not use two-part tape sealing system.

C. Grind welds to provide smooth surface free of burrs, sharp edges, and weld splatter. When welding stainless steel with a No. 3 or 4 finish, grind the welds flush, polish the exposed welds, and treat the welds to remove discoloration caused by welding.

D. Maintain consistency, symmetry, and uniformity in the arrangement and fabrication of fittings, hangers and supports, duct accessories, and air outlets.

E. Repair or replace damaged sections and finished work that does not comply with these requirements.

3.3 ADDITIONAL INSTALLATION REQUIREMENTS FOR COMMERCIAL KITCHEN HOOD EXHAUST DUCT

A. Install commercial kitchen hood exhaust ducts without dips and traps that may hold grease, and sloped a minimum of 2 percent to drain grease back to the hood.

B. Install fire-rated access panel assemblies at each change in direction and at maximum intervals of 20 feet in horizontal ducts, and at every floor for vertical ducts, or as indicated on Drawings. Locate access panel on top or sides of duct a minimum of 1-1/2 inches from bottom of duct.

C. Do not penetrate fire-rated assemblies except as allowed by applicable building codes and authorities having jurisdiction.

3.4 DUCT SEALING

A. Seal ducts for duct static-pressure, seal classes, and leakage classes specified in "Duct Schedule" Article according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

B. Seal ducts at a minimum to the following seal classes according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible":

1. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
2. Outdoor, Supply-Air Ducts: Seal Class A.
3. Outdoor, Exhaust Ducts: Seal Class C.
4. Outdoor, Return-Air Ducts: Seal Class C.
5. Unconditioned Space, Supply-Air Ducts in Pressure Classes 2-Inch wg and Lower: Seal Class B.
6. Unconditioned Space, Supply-Air Ducts in Pressure Classes Higher Than 2-Inch wg: Seal Class A.
7. Unconditioned Space, Exhaust Ducts: Seal Class C.
8. Unconditioned Space, Return-Air Ducts: Seal Class B.
9. Conditioned Space, Supply-Air Ducts in Pressure Classes 2-Inch wg and Lower: Seal Class C.
10. Conditioned Space, Supply-Air Ducts in Pressure Classes Higher Than 2-Inch wg: Seal Class B.
11. Conditioned Space, Exhaust Ducts: Seal Class B.
12. Conditioned Space, Return-Air Ducts: Seal Class C.

C. Leakage Tests: (Engineer shall include or remove as required)

1. Test 100 percent of installed ductwork for leakage in accordance with "System Pressure Testing for Leaks," published by United Sheet Metal Division of United McGill Corporation. Use prescribed test kit containing test blower, two U-tube manometers and calibrated curve attached to the orifice tube assembly.
2. Pressurize installed duct system in 2 inch water gauge over design operating pressure. Total allowable leakage shall not exceed one percent of air handling capacity of system. If system is tested in sections, add leakage rates for individual sections to determine leakage for the whole system.
3. Correct leaks found in excess of allowable limits. Retest.
4. Have test results available for review on a progressive and final basis. Include test results in project closing file.
5. For Bidding purposes, assume all leakage tests will be witnessed by Engineer. Notify Engineer of testing schedule a minimum of (7) days in advance.
6. Disassemble, reassemble, and seal segments of systems to accommodate leakage testing and for compliance with test requirements.
7. Test for leaks before applying external insulation.

3.5 HANGER AND SUPPORT INSTALLATION

A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 5, "Hangers and Supports."

B. Building Attachments: Concrete inserts, powder-actuated fasteners, or structural-steel fasteners appropriate for construction materials to which hangers are being attached.

1. Where practical, install concrete inserts before placing concrete.

2. Install powder-actuated concrete fasteners after concrete is placed and completely cured.
3. Use powder-actuated concrete fasteners for standard-weight aggregate concretes or for slabs more than 4 inches thick.
4. Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes or for slabs less than 4 inches thick.
5. Do not use powder-actuated concrete fasteners for seismic restraints.

C. Hanger Spacing: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct," for maximum hanger spacing; install hangers and supports within 24 inches of each elbow and within 48 inches of each branch intersection.

D. Hangers Exposed to View: Threaded rod and angle or channel supports.

E. Support vertical ducts with steel angles or channel secured to the sides of the duct with welds, bolts, sheet metal screws, or blind rivets; support at each floor and at a maximum intervals of 16 feet.

F. Install upper attachments to structures. Select and size upper attachments with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

3.6 SEISMIC-RESTRAINT-DEVICE INSTALLATION

A. Install ducts with hangers and braces designed to support the duct and to restrain against seismic forces required by applicable building codes. Comply with SMACNA's "Seismic Restraint Manual: Guidelines for Mechanical Systems." And ASCE/SEI 7.

3.7 CONNECTIONS

A. Make connections to equipment with flexible connectors complying with Section 233300 "Air Duct Accessories."

B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

3.8 START UP

A. Air Balance: Comply with requirements in Section 230593 "Testing, Adjusting, and Balancing for HVAC."

3.9 DUCT SCHEDULE

A. Fabricate ducts with galvanized sheet steel except as otherwise indicated and as follows:

B. Supply Ducts:

1. Ducts Connected to Fan Coil Units, Furnaces, Heat Pumps, and Terminal Units:

a. Pressure Class: Positive 2-inch wg.
b. Minimum SMACNA Seal Class: C.

c. SMACNA Leakage Class for Rectangular: 16.
d. SMACNA Leakage Class for Round and Flat Oval: 8.

2. Ducts Connected to Constant-Volume Air-Handling Units:

a. Pressure Class: Positive 2-inch wg.
b. Minimum SMACNA Seal Class: C.
c. SMACNA Leakage Class for Rectangular: 16.
d. SMACNA Leakage Class for Round and Flat Oval: 8.

3. Ducts Connected to Variable-Air-Volume Air-Handling Units:

a. Pressure Class: Positive 3-inch wg.
b. Minimum SMACNA Seal Class: B.
c. SMACNA Leakage Class for Rectangular: 8.
d. SMACNA Leakage Class for Round and Flat Oval: 4.

4. Ducts Connected to Equipment Not Listed Above:

a. Pressure Class: Positive 2-inch wg.
b. Minimum SMACNA Seal Class: C.
c. SMACNA Leakage Class for Rectangular: 16.
d. SMACNA Leakage Class for Round and Flat Oval: 8.

C. Return Ducts:

1. Ducts Connected to Fan Coil Units, Furnaces, Heat Pumps, and Terminal Units:

a. Pressure Class: Positive or negative 2-inch wg.
b. Minimum SMACNA Seal Class: C.
c. SMACNA Leakage Class for Rectangular: 16.
d. SMACNA Leakage Class for Round and Flat Oval: 8.

2. Ducts Connected to Air-Handling Units:

a. Pressure Class: Positive or negative 2-inch wg.
b. Minimum SMACNA Seal Class: C.
c. SMACNA Leakage Class for Rectangular: 16.
d. SMACNA Leakage Class for Round and Flat Oval: 8.

3. Ducts Connected to Equipment Not Listed Above:

a. Pressure Class: Positive or negative 2-inch wg.
b. Minimum SMACNA Seal Class: C.
c. SMACNA Leakage Class for Rectangular: 16.
d. SMACNA Leakage Class for Round and Flat Oval: [**3**] [**6**] [**12**] <**Insert value**>.

D. Exhaust Ducts:

1. Ducts Connected to Fans Exhausting (ASHRAE 62.1, Class 1 and 2) Air:

a. Pressure Class: Negative 2-inch wg.
b. Minimum SMACNA Seal Class: C if negative pressure, and A if positive pressure.
c. SMACNA Leakage Class for Rectangular: 16.
d. SMACNA Leakage Class for Round and Flat Oval: 8.

2. Ducts Connected to Air-Handling Units:

    a. Pressure Class: Positive or negative 3-inch wg.
    b. Minimum SMACNA Seal Class: B if negative pressure, and A if positive pressure.
    c. SMACNA Leakage Class for Rectangular: 8.
    d. SMACNA Leakage Class for Round and Flat Oval: 4.

E. Outdoor-Air (Not Filtered, Heated, or Cooled) Ducts:

1. Ducts Connected to Fan Coil Units, Furnaces, Heat Pumps, and Terminal Units:

    a. Pressure Class: Positive or negative 2-inch wg.
    b. Minimum SMACNA Seal Class: C.
    c. SMACNA Leakage Class for Rectangular: 16.
    d. SMACNA Leakage Class for Round and Flat Oval: 8.

2. Ducts Connected to Air-Handling Units:

    a. Pressure Class: Positive or negative 3-inch wg.
    b. Minimum SMACNA Seal Class: B.
    c. SMACNA Leakage Class for Rectangular: 8.
    d. SMACNA Leakage Class for Round and Flat Oval: 4.

3. Ducts Connected to Equipment Not Listed Above:

    a. Pressure Class: Positive or negative 3-inch wg.
    b. Minimum SMACNA Seal Class: B.
    c. SMACNA Leakage Class for Rectangular: 8.
    d. SMACNA Leakage Class for Round and Flat Oval: 4.

F. Intermediate Reinforcement:

1. Galvanized-Steel Ducts: Galvanized steel.
2. PVC-Coated Ducts:

    a. Exposed to Airstream: Match duct material.
    b. Not Exposed to Airstream: Galvanized.

3. Stainless-Steel Ducts:

    a. Exposed to Airstream: Match duct material.
    b. Not Exposed to Airstream: Match duct material.

4. Aluminum Ducts: Aluminum.

G. Elbow Configuration:

1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-2, "Rectangular Elbows."

    a. Velocity 1000 fpm or Lower:

        1) Radius Type RE 1 with minimum 0.5 radius-to-diameter ratio.
        2) Mitered Type RE 4 without vanes.

b. Velocity 1000 to 1500 fpm:

1) Radius Type RE 1 with minimum 1.0 radius-to-diameter ratio.
2) Radius Type RE 3 with minimum 0.5 radius-to-diameter ratio and two vanes.
3) Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."

c. Velocity 1500 fpm or Higher:

1) Radius Type RE 1 with minimum 1.5 radius-to-diameter ratio.
2) Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and two vanes.
3) Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."

2. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-2, "Rectangular Elbows."

a. Radius Type RE 1 with minimum 1.5 radius-to-diameter ratio.
b. Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and two vanes.
c. Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."

3. Round Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-4, "Round Duct Elbows."

a. Minimum Radius-to-Diameter Ratio and Elbow Segments: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 3-1, "Mitered Elbows." Elbows with less than 90-degree change of direction have proportionately fewer segments.

1) Velocity 1000 fpm or Lower: 0.5 radius-to-diameter ratio and three segments for 90-degree elbow.
2) Velocity 1000 to 1500 fpm: 1.0 radius-to-diameter ratio and four segments for 90-degree elbow.
3) Velocity 1500 fpm or Higher: 1.5 radius-to-diameter ratio and five segments for 90-degree elbow.
4) Radius-to Diameter Ratio: 1.5.

b. Round Elbows, 12 Inches and Smaller in Diameter: Stamped or pleated.
c. Round Elbows, 14 Inches and Larger in Diameter: Standing seam.

H. Branch Configuration:

1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-6, "Branch Connection."

a. Rectangular Main to Rectangular Branch: 45-degree entry.
b. Rectangular Main to Round Branch: Spin in.

2. Round: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees." Saddle taps are permitted in existing duct.

a. Velocity 1000 fpm or Lower: 90-degree tap.
b. Velocity 1000 to 1500 fpm: Conical tap.
c. Velocity 1500 fpm or Higher: 45-degree lateral.

END OF SECTION

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PART 1 - **GENERAL**

1.1 SUMMARY

A. Section Includes:

1. Backdraft and pressure relief dampers.
2. Manual volume dampers.
3. Control dampers.
4. Flange connectors.
5. Turning vanes.
6. Duct-mounted access doors.
7. Flexible connectors.
8. Duct accessory hardware.

1.2 SUBMITTALS

A. See section 220000 “General Requirements of Plumbing and HVAC” for submittal requirements.

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTION

A. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems," and with NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."

B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

2.2 MATERIALS

A. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.

1. Galvanized Coating Designation: G90.
2. Exposed-Surface Finish: Mill phosphatized.

B. Stainless-Steel Sheets: Comply with ASTM A 480/A 480M, Type 304, and having a 2D finish for concealed ducts and 2BA finish for exposed ducts.

C. Aluminum Sheets: Comply with ASTM B 209, Alloy 3003, Temper H14; with mill finish for concealed ducts and standard, 1-side bright finish for exposed ducts.

D. Extruded Aluminum: Comply with ASTM B 221, Alloy 6063, Temper T6.

E. Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized sheet metal ducts; compatible materials for aluminum and stainless-steel ducts.

F. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.3 BACKDRAFT AND PRESSURE RELIEF DAMPERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Cesco Products; a divsion of MESTEK, Inc.
2. Nailor Industries Inc.
3. Ruskin Company.

B. Description: Gravity balanced.

C. Maximum Air Velocity: 1000 fpm.

D. Maximum System Pressure: 4.5 inch wg.

E. Frame: Hat-shaped, 0.063-inch-thick extruded aluminum, with welded corners or mechanically attached and mounting flange.

F. Blades: Multiple single-piece blades, end pivoted, maximum 6-inch width, 0.025-inch-thick, roll-formed aluminum with sealed edges.

G. Blade Action: Parallel.

H. Blade Seals: Extruded vinyl, mechanically locked.

I. Blade Axles:

1. Material: Nonmetallic.
2. Diameter: 0.20 inch.

J. Bearings: synthetic pivot bushings.

K. Accessories:

1. Adjustment device to permit setting for varying differential static pressure.
2. Counterweights and spring-assist kits for vertical airflow installations.
3. Electric actuators.
4. Chain pulls.
5. Screen Mounting: Front mounted in sleeve.
    a. Sleeve Thickness: 20 gage minimum.
    b. Sleeve Length: 6 inches minimum.
6. Screen Mounting: Rear mounted.
7. Screen Material: Aluminum.
8. Screen Type: Bird.
9. 90-degree stops.

2.4 MANUAL VOLUME DAMPERS

A. Standard, Steel, Manual Volume Dampers:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Cesco Products; a divsion of MESTEK, Inc.
   b. Nailor Industries Inc.
   c. Ruskin Company.

2. Standard leakage rating.

3. Suitable for horizontal or vertical applications.
4. Frames:

   a. Frame: 16 Gauge galvanized steel, 5 in deep
   b. Mitered and welded corners.
   c. Flanges for attaching to walls and flangeless frames for installing in ducts.

5. Blades:

   a. Multiple or single blade.
   b. Parallel- or opposed-blade design.
   c. Stiffen damper blades for stability.
   d. 16 gauge galvanized steel with V groove for stiffness.

6. Blade Axles: Galvanized steel.
7. Bearings:

   a. Molded synthetic.
   b. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.

8. Tie Bars and Brackets: Galvanized steel.

2.5 CONTROL DAMPERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Cesco Products; a divsion of MESTEK, Inc.
2. Nailor Industries Inc.
3. Ruskin Company.

B. Frames:

1. U shaped.
2. 16 gage galvanized steel.
3. Interlocking, gusseted corners.

C. Blades:

1. Multiple blade with maximum blade width of 6 inches.
2. Parallel- and opposed-blade design.

3. 14 gage Galvanized-steel.
4. Blade Edging: Closed-cell neoprene.
5. Blade Edging: Inflatable seal blade edging, or replaceable rubber seals.

D. Blade Axles: 1/2-inch-diameter; galvanized steel; blade-linkage hardware of zinc-plated steel and brass; ends sealed against blade bearings.

1. Operating Temperature Range: From minus 40 to plus 200 deg F.

E. Bearings:

1. Oil-impregnated stainless-steel sleeve.
2. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.
3. Thrust bearings at each end of every blade.

2.6 FLANGE CONNECTORS

A. Description: Roll-formed, factory-fabricated, slide-on transverse flange connectors, gaskets, and components.

B. Material: Galvanized steel.

C. Gage and Shape: Match connecting ductwork.

2.7 TURNING VANES

A. Manufactured Turning Vanes for Metal Ducts: Curved blades of galvanized sheet steel; support with bars perpendicular to blades set; set into vane runners suitable for duct mounting.

1. Acoustic Turning Vanes: Fabricate airfoil-shaped aluminum extrusions with perforated faces and fibrous-glass fill.

B. Manufactured Turning Vanes for Nonmetal Ducts: Fabricate curved blades of resin-bonded fiberglass with acrylic polymer coating; support with bars perpendicular to blades set; set into vane runners suitable for duct mounting.

C. General Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"; Figures 4-3, "Vanes and Vane Runners," and 4-4, "Vane Support in Elbows."

D. Vane Construction: Double wall.

2.8 DUCT-MOUNTED ACCESS DOORS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Cesco Products; a divsion of MESTEK, Inc.
2. Ductmate Industries, Inc.
3. Flexmaster U.S.A., Inc.
4. Nailor Industries Inc.

B. Duct-Mounted Access Doors: Fabricate access panels according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"; Figures 7-2, "Duct Access Doors and Panels," and 7-3, "Access Doors - Round Duct."

1. Door:

   a. Double wall, rectangular.
   b. Galvanized sheet metal with insulation fill and thickness as indicated for duct pressure class.
   c. Vision panel.
   d. Hinges and Latches: 1-by-1-inchbutt or piano hinge and cam latches.
   e. Fabricate doors airtight and suitable for duct pressure class.

2. Frame: Galvanized sheet steel, with bend-over tabs and foam gaskets.
3. Number of Hinges and Locks:

   a. Access Doors Less Than 12 Inches Square: No hinges and two sash locks.
   b. Access Doors up to 18 Inches Square: Continuous and two sash locks.
   c. Access Doors up to 24 by 48 Inches: Continuous and two compression latches with outside and inside handles.
   d. Access Doors Larger Than 24 by 48 Inches: Continuous and two compression latches with outside and inside handles.

C. Pressure Relief Access Door:

1. Door and Frame Material: Galvanized sheet steel.
2. Door: Double wall with insulation fill with metal thickness applicable for duct pressure class.
3. Operation: Open outward for positive-pressure ducts and inward for negative-pressure ducts.
4. Factory set at 3.0- to 8.0-inch wg.
5. Doors close when pressures are within set-point range.
6. Hinge: Continuous piano.
7. Latches: Cam.
8. Seal: Neoprene or foam rubber.
9. Insulation Fill: 1-inch-thick, fibrous-glass or polystyrene-foam board.

2.9 FLEXIBLE CONNECTORS

A. Materials: Flame-retardant or noncombustible fabrics.

B. Coatings and Adhesives: Comply with UL 181, Class 1.

C. Metal-Edged Connectors: Factory fabricated with a fabric strip 3-1/2 inches wide attached to two strips of 2-3/4-inch-wide, 0.028-inch-thick, galvanized sheet steel or 0.032-inch-thick aluminum sheets. Provide metal compatible with connected ducts.

D. Indoor System, Flexible Connector Fabric: Glass fabric double coated with neoprene.

1. Minimum Weight: 26 oz./sq. yd..
2. Tensile Strength: 480 lbf/inch in the warp and 360 lbf/inch in the filling.
3. Service Temperature: Minus 40 to plus 200 deg F.

E. Outdoor System, Flexible Connector Fabric: Glass fabric double coated with weatherproof, synthetic rubber resistant to UV rays and ozone.

1. Minimum Weight: 24 oz./sq. yd..
2. Tensile Strength: 530 lbf/inch in the warp and 440 lbf/inch in the filling.
3. Service Temperature: Minus 50 to plus 250 deg F.

2.10 DUCT ACCESSORY HARDWARE

A. Instrument Test Holes: Cast iron or cast aluminum to suit duct material, including screw cap and gasket. Size to allow insertion of pitot tube and other testing instruments and of length to suit duct-insulation thickness.

B. Adhesives: High strength, quick setting, neoprene based, waterproof, and resistant to gasoline and grease.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install duct accessories according to applicable details in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for metal ducts and in NAIMA AH116, "Fibrous Glass Duct Construction Standards," for fibrous-glass ducts.

B. Install duct accessories of materials suited to duct materials; use galvanized-steel accessories in galvanized-steel and fibrous-glass ducts, stainless-steel accessories in stainless-steel ducts, and aluminum accessories in aluminum ducts.

C. Install control dampers at inlet of exhaust fans or exhaust ducts as close as possible to exhaust fan unless otherwise indicated.

D. Install volume dampers at points on supply, return, and exhaust systems where branches extend from larger ducts. Where dampers are installed in ducts having duct liner, install dampers with hat channels of same depth as liner, and terminate liner with nosing at hat channel.

E. Set dampers to fully open position before testing, adjusting, and balancing.

F. Install test holes at fan inlets and outlets and elsewhere as indicated.

G. Install fire and smoke dampers according to UL listing.

H. Install duct access doors on sides of ducts to allow for inspecting, adjusting, and maintaining accessories and equipment at the following locations:

1. On both sides of duct coils.
2. Upstream and downstream from duct filters.
3. At outdoor-air intakes and mixed-air plenums.
4. At drain pans and seals.
5. Downstream from control dampers, backdraft dampers, and equipment.
6. Adjacent to and close enough to fire or smoke dampers, to reset or reinstall fusible links. Access doors for access to fire or smoke dampers having fusible links shall be pressure

relief access doors and shall be outward operation for access doors installed upstream from dampers and inward operation for access doors installed downstream from dampers.

7. At each change in direction and at maximum 50-foot spacing.
8. Control devices requiring inspection.
9. Elsewhere as indicated.

I. Install access doors with swing against duct static pressure.

J. Access Door Sizes:

1. One-Hand or Inspection Access: 8 by 5 inches.
2. Two-Hand Access: 12 by 6 inches.
3. Head and Hand Access: 18 by 10 inches.
4. Head and Shoulders Access: 21 by 14 inches.
5. Body Access: 25 by 14 inches.
6. Body plus Ladder Access: 25 by 17 inches.

K. Label access doors according to Section 230553 "Identification for HVAC Piping and Equipment" to indicate the purpose of access door.

L. Install flexible connectors to connect ducts to equipment.

M. Connect terminal units to supply ducts directly or with maximum 12-inch lengths of flexible duct. Do not use flexible ducts to change directions.

N. Connect diffusers or light troffer boots to ducts directly or with maximum 60-inch lengths of flexible duct clamped or strapped in place.

O. Connect flexible ducts to metal ducts with draw bands.

P. Install duct test holes where required for testing and balancing purposes.

3.2 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Operate dampers to verify full range of movement.
2. Inspect locations of access doors and verify that purpose of access door can be performed.
3. Operate fire and smoke dampers to verify full range of movement and verify that proper heat-response device is installed.
4. Inspect turning vanes for proper and secure installation.

END OF SECTION

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PART 1 - **GENERAL**

1.1 SUMMARY

A. Section Includes: Insulated flexible ducts.

1.2 SUBMITTALS

A. See section 220000 “General Requirements of Plumbing and HVAC” for submittal requirements.

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTION

A. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems," and with NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."

B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

C. Comply with the Air Diffusion Council's "ADC Flexible Air Duct Test Code FD 72-R1."

D. Comply with ASTM E 96/E 96M, "Test Methods for Water Vapor Transmission of Materials."

2.2 INSULATED FLEXIBLE DUCTS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Flexmaster U.S.A., Inc.
2. McGill AirFlow LLC.
3. Thermaflex; a Flex-Tek Group company.

B. Insulated, Flexible Duct: UL 181, Class 1, two-ply vinyl film supported by helically wound, spring-steel wire; fibrous-glass insulation; aluminized vapor-barrier film.

1. Pressure Rating: 10-inch wg positive and 1.0-inch wg negative.
2. Maximum Air Velocity: 4000 fpm.
3. Temperature Range: Minus 10 to plus 160 deg F.
4. Insulation R-Value: R6.

2.3 FLEXIBLE DUCT CONNECTORS

A. Clamps: Stainless-steel band with cadmium-plated hex screw to tighten band with a worm-gear action in sizes 3 through 18 inches, to suit duct size.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install flexible ducts according to applicable details in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for metal ducts and in NAIMA AH116, "Fibrous Glass Duct Construction Standards," for fibrous-glass ducts.

B. Install in indoor applications only. Flexible ductwork should not be exposed to UV lighting.

C. Connect terminal units to supply ducts with maximum 12-inch lengths of flexible duct. Do not use flexible ducts to change directions.

D. Connect diffusers or light troffer boots to ducts with maximum 60-inch lengths of flexible duct clamped or strapped in place.

E. Install duct test holes where required for testing and balancing purposes.

F. Installation:

1. Install ducts fully extended.
2. Do not bend ducts across sharp corners.
3. Bends of flexible ducting shall not exceed a minimum of one duct diameter.
4. Avoid contact with metal fixtures, water lines, pipes, or conduits.
5. Install flexible ducts in a direct line, without sags, twists, or turns.

G. Supporting Flexible Ducts:

1. Suspend flexible ducts with bands 1-1/2 inches wide or wider and spaced a maximum of 48 inches apart. Maximum centerline sag between supports shall not exceed 1/2 inch per 12 inches.
2. Install extra supports at bends placed approximately one duct diameter from center line of the bend.
3. Ducts may rest on ceiling joists or truss supports. Spacing between supports shall not exceed the maximum spacing per manufacturer's written installation instructions.
4. Vertically installed ducts shall be stabilized by support straps at a maximum of 72 inches o.c.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Grilles, Registers and Diffusers.

B. Related Requirements:

1. Section 233300 "Air Duct Accessories" for fire and smoke dampers and volume-control dampers not integral to diffusers.

1.2 SUBMITTALS

A. See Section 220000 “General Requirements of Plumbing and HVAC” for submittal requirements.

PART 2 - PRODUCTS

2.1 GRILLES, REGISTERS AND DIFFUSERS

A. Manufacturers: Subject to compliance with requirements, provide products by the following:

1. Krueger.
2. Nailor Industries Inc.
3. Price

B. See the “Grilles Registers and Diffusers Schedule” on the drawings for grille, register or diffuser type, mounting, capacities, characteristics, finish, etc.

C. Coordinate the color and finish of all grilles registers and diffusers with the architect if not specifically listed in the “Grilles Registers and Diffusers Schedule”.

D. Substituted grilles, registers and diffusers must meet or exceed the performance of the schedules diffuser.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install grilles, registers and diffusers level and plumb.

B. Outlets and Inlets: Drawings indicate general arrangement of ducts, fittings, and accessories. Air outlet and inlet locations have been indicated to achieve design requirements for air volume, noise criteria, airflow pattern, throw, and pressure drop. Make final locations where indicated, as much as practical. For units installed in lay-in ceiling panels, locate units in the center of panel.

Where architectural features or other items conflict with installation, notify Architect for a determination of final location.

C. Install grilles, registers and diffusers with airtight connections to ducts and to allow service and maintenance of dampers, air extractors, and fire dampers.

D. Provide all duct transitions and duct fittings required for a complete installation.

3.2 ADJUSTING

A. After installation, adjust grilles, registers and diffusers to air patterns indicated, or as directed, before starting air balancing.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes split-system air-conditioning and heat-pump units consisting of separate evaporator-fan and compressor-condenser components.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

1.3 INFORMATIONAL SUBMITTALS

A. Warranty: Sample of special warranty.

1.4 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.5 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. ASHRAE Compliance:

1. Fabricate and label refrigeration system to comply with ASHRAE 15, "Safety Standard for Refrigeration Systems."
2. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1, Section 4 - "Outdoor Air Quality," Section 5 - "Systems and Equipment," Section 6 - " Procedures," and Section 7 - "Construction and System Start-up."

C. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of split-system air-conditioning units that fail in materials or workmanship within specified warranty period.

PART 2 - PRODUCTS

2.1 MANUFACTURERS
- A. Daikin AC
- B. LG

2.2 INDOOR UNITS
- A. General:
  1. The indoor unit shall be factory assembled and pre-wired with all necessary electronic and refrigerant controls. Both liquid and suction lines must be individually insulated between the outdoor and indoor units.
- B. Unit Cabinet:
  1. The indoor unit shall have a white, “flat screen” finish.
  2. The drain and refrigerant piping shall be concealed from view and enter the unit through the back panel.
  3. The cabinet shall be supplied with a mounting plate to be installed onto a wall for securely mounting the cabinet.
- C. Fan:
  1. The evaporator fan shall be an assembly consisting of a direct-driven fan by a single motor.
  2. The fan shall be statically and dynamically balanced and operate on a motor with permanent lubricated bearings.
  3. An auto-swing louver for adjustable air flow (both vertically and horizontally).
  4. The indoor fan shall offer a choice of five speeds, plus quiet and auto settings.
- D. Filter:
  1. The return air filter provided will be a mildew proof, removable and washable filter.
- E. Coil:
  1. The evaporator coil shall be a nonferrous, aluminum fin on copper tube heat exchanger.
  2. All tube joints shall be brazed with silver alloy or phoscopper.
  3. All coils will be factory pressure tested.
  4. A condensate pan shall be provided under the coil with a drain connection.
  5. Provide condensate pump where required and coordinate with electrical contractor for power requirements.
- F. Electrical
  1. Electrical connections shall be made. See drawings for voltage, phase requirements.
- G. Control:
  1. The unit shall have a wall mounted, wired controller. The controller shall have the following capabilities:
     a. System On/Off
     b. Fan: On/Auto
     c. Mode: Cool/Dry/Heat/Auto
     d. Schedule: 7 day programmable
     e. Temperature adjustment
     f. Auxiliary contacts to turn on/off supplemental heating equipment if applicable.

2.3 OUTDOOR UNITS
- A. General:
  1. The outdoor unit shall be complete factory assembled and pre-wired with all necessary electronic and refrigerant controls. The system shall have all provisions required to allow cooling operation to 5 outside air temperature.
- B. Unit Cabinet:
  1. The outdoor unit shall be completely weatherproof and corrosion resistant. The unit shall be constructed from rust-proofed mild steel panels coated with a baked enamel finish.
- C. Condenser Fan:
  1. The fan shall be a direct drive, propeller type fan.
  2. The motor shall be inverter driven, permanently lubricated type bearings, inherent.

3. A fan guard is provided on the outdoor unit to prevent contact with fan operation.
4. Airflow shall be horizontal discharge.

D. Condenser Coil:
1. The outdoor unit shall be completely weatherproof and corrosion resistant. The unit shall be constructed from rust-proofed mild steel panels coated with a baked enamel finish.

E. Compressor:
1. The compressor shall be a inverter driven compressor.
2. The outdoor unit shall have an accumulator and four-way reversing valve.
3. The compressor shall have an internal thermal overload.
4. The outdoor unit can operate with a maximum vertical height difference of 66 feet and overall maximum length of 100 feet without any oil traps or additional components.

F. Electrical
1. The electrical power requirement is 208-230 volt, 1-phase, and 60 Hz power.
2. The outdoor shall be controlled by a microprocessor located in the outdoor and indoor units via commands from the wired controller.
3. Dedicated EEV’s shall be provided for capacity control during part load of the indoor unit.

G. Sound:
1. The outdoor unit shall have a sound level of 54 dB(A) when in maximum cooling operation and measured 3ft from the outdoor unit.

2.4 ACCESSORIES

A. Refrigerant Line Kits: Soft-annealed copper suction and liquid lines factory cleaned, dried, pressurized, and sealed; factory-insulated suction line with flared fittings at both ends.
B. Drain Hose: For condensate.
C. Additional Monitoring:
1. Monitor constant and variable motor loads.
2. Monitor variable-frequency-drive operation.
3. Monitor economizer cycle.
4. Monitor cooling load.
5. Monitor air distribution static pressure and ventilation air volumes.

2.5 CAPACITIES AND CHARACTERISTICS

A. See Drawings.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install units level and plumb.
B. Install evaporator-fan components using manufacturer's standard mounting devices securely fastened to building structure.
C. Install roof-mounted, compressor-condenser components on equipment supports specified in Section 07 72 00 "Roof Accessories." Anchor units to supports with removable, cadmium-plated fasteners.
D. Equipment Mounting:
1. Comply with requirements for vibration isolation and seismic control devices specified in Section 23 05 48 "Vibration and Seismic Controls for HVAC."
2. Comply with requirements for vibration isolation devices specified in Section 23 05 48.13 "Vibration Controls for HVAC."
E. Install and connect precharged refrigerant tubing to component's quick-connect fittings. Install tubing to allow access to unit.

3.2 CONNECTIONS

A. Piping installation requirements are specified in other Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
B. Where piping is installed adjacent to unit, allow space for service and maintenance of unit.

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections.
   1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

B. Tests and Inspections:
   1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
   2. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
   3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

C. Remove and replace malfunctioning units and retest as specified above.

D. Prepare test and inspection reports.

3.4 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain units.

END OF SECTION 238126

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Sleeves for raceways and cables.
2. Sleeve seals.
3. Grout.
4. Common electrical installation requirements.

1.2 SUBMITTALS

A. Product Data: For sleeve seals.

PART 2 - PRODUCTS

2.1 SLEEVES FOR RACEWAYS AND CABLES

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

C. Sleeves for Rectangular Openings: Galvanized sheet steel.

1. Minimum Metal Thickness:

a. For sleeve cross-section rectangle perimeter less than 50 inches and no side more than 16 inches, thickness shall be 0.052 inch.
b. For sleeve cross-section rectangle perimeter equal to, or more than, 50 inches and 1 or more sides equal to, or more than, 16 inches, thickness shall be 0.138 inch.

2.2 SLEEVE SEALS

A. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and raceway or cable.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. Advance Products & Systems, Inc.
b. Calpico, Inc.

c. Metraflex Co.
d. Pipeline Seal and Insulator, Inc.

3. Sealing Elements: EPDM or NBR interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
4. Pressure Plates: Stainless steel. Include two for each sealing element.
5. Connecting Bolts and Nuts: Stainless steel]of length required to secure pressure plates to sealing elements. Include one for each sealing element.

2.3 GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive, nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

PART 3 - EXECUTION

3.1 COMMON REQUIREMENTS FOR ELECTRICAL INSTALLATION

A. Comply with NECA 1.

B. Measure indicated mounting heights to bottom of unit for suspended items and to center of unit for wall-mounting items.

C. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide maximum possible headroom consistent with these requirements.

D. Equipment: Install to facilitate service, maintenance, and repair or replacement of components of both electrical equipment and other nearby installations. Connect in such a way as to facilitate future disconnecting with minimum interference with other items in the vicinity.

E. Right of Way: Give to piping systems installed at a required slope.

3.2 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.

B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.

C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.

D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.

E. Cut sleeves to length for mounting flush with both surfaces of walls.

F. Extend sleeves installed in floors 2 inches above finished floor level.

G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway or cable, unless indicated otherwise.

H. Seal space outside of sleeves with grout for penetrations of concrete and masonry

1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.

I. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "Joint Sealants.".

J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials. Comply with requirements in Division 07 Section "Penetration Firestopping."

K. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.

L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

M. Underground, Exterior-Wall Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

3.3 SLEEVE-SEAL INSTALLATION

A. Install to seal exterior wall penetrations.

B. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.4 FIRESTOPPING

A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Penetration Firestopping."

END OF SECTION 260500

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PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Building wires and cables rated 600 V and less.
2. Connectors, splices, and terminations rated 600 V and less.
3. Sleeves and sleeve seals for cables.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Field quality-control test reports.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 CONDUCTORS AND CABLES

A. **Copper** Conductors: Comply with NEMA WC 70.

B. Conductor Insulation: Comply with NEMA WC 70 for Types **THW** and **THHN-THWN**.

2.2 CONNECTORS AND SPLICES

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. AFC Cable Systems, Inc.
2. Hubbell Power Systems, Inc.
3. O-Z/Gedney; EGS Electrical Group LLC.
4. 3M; Electrical Products Division.
5. Tyco Electronics Corp.

C. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

2.3 SLEEVES FOR CABLES

A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.

B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

C. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."

2.4 SLEEVE SEALS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

C. Basis-of-Design Product: Subject to compliance with requirements, provide **the product indicated on Drawings** or a comparable product by one of the following:

1. Advance Products & Systems, Inc.
2. Calpico, Inc.
3. Metraflex Co.
4. Pipeline Seal and Insulator, Inc.

D. Description: Modular sealing device, designed for field assembly, to fill annular space between sleeve and cable.

1. Sealing Elements: **EPDM** or **NBR** interlocking links shaped to fit surface of cable or conduit. Include type and number required for material and size of raceway or cable.
2. Pressure Plates: **Stainless steel**. Include two for each sealing element.
3. Connecting Bolts and Nuts: S**tainless steel** of length required to secure pressure plates to sealing elements. Include one for each sealing element.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders: **Copper** Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Service Entrance: Type THHN-THWN, single conductors in raceway.

B. Exposed Feeders: Type THHN-THWN, single conductors in raceway.

C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspaces: Type THHN-THWN, single conductors in raceway.

D. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.

E. Exposed Branch Circuits, Including in Crawlspaces: Type THHN-THWN, single conductors in raceway.

F. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway, OR Romex product NEC compliant for application and approved by AHJ. Contractor shall verify NEC and AHJ compliance prior to any rough-in.

G. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.

H. Cord Drops and Portable Appliance Connections: Type SO, hard service cord with stainless-steel, wire-mesh, strain relief device at terminations to suit application.

I. Class 1 Control Circuits: Type THHN-THWN, in raceway.

J. Class 2 Control Circuits: Type THHN-THWN, in raceway.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.

B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.

E. Support cables according to Division 26 Sections "Hangers and Supports for Electrical Systems."

F. Identify and color-code conductors and cables according to Division 26 Section "Identification for Electrical Systems."

G. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.

H. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

1. Use oxide inhibitor in each splice and tap conductor for aluminum conductors.

I. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches of slack.

3.4 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

A. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Penetration Firestopping."

B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.

C. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.

D. Cut sleeves to length for mounting flush with both wall surfaces.

E. Extend sleeves installed in floors 2 inches above finished floor level.

F. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and cable unless sleeve seal is to be installed.

G. Seal space outside of sleeves with grout for penetrations of concrete and masonry and with approved joint compound for gypsum board assemblies.

H. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and cable, using joint sealant appropriate for size, depth, and location of joint according to Division 07 Section "Joint Sealants."

I. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at cable penetrations. Install sleeves and seal with firestop materials according to Division 07 Section "Penetration Firestopping."

J. Roof-Penetration Sleeves: Seal penetration of individual cables with flexible boot-type flashing units applied in coordination with roofing work.

K. Aboveground Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Size sleeves to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.

L. Underground Exterior-Wall Penetrations: Install cast-iron "wall pipes" for sleeves. Size sleeves to allow for 1-inch annular clear space between cable and sleeve for installing mechanical sleeve seals.

3.5 SLEEVE-SEAL INSTALLATION

A. Install to seal underground exterior-wall penetrations.

B. Use type and number of sealing elements recommended by manufacturer for cable material and size. Position cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

3.6 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Division 07 Section "Penetration Firestopping."

3.7 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.

B. Tests and Inspections:

1. After installing conductors and cables and before electrical circuitry has been energized, test service entrance and feeder conductors, and conductors feeding the following critical equipment and service for compliance with requirements.

2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
3. Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each splice in cables and conductors No. 3 AWG and larger. Remove box and equipment covers so splices are accessible to portable scanner.

    a. Follow-up Infrared Scanning: Perform an additional follow-up infrared scan of each splice 11 months after date of Substantial Completion.
    b. Instrument: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values. Provide calibration record for device.
    c. Record of Infrared Scanning: Prepare a certified report that identifies splices checked and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

C. Test Reports: Prepare a written report to record the following:

1. Test procedures used.
2. Test results that comply with requirements.
3. Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.

D. Remove and replace malfunctioning units and retest as specified above.

END OF SECTION 260519

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PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes methods and materials for grounding systems and equipment.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Field quality-control test reports.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 - PRODUCTS

2.1 CONDUCTORS

A. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.

B. Bare Copper Conductors:

1. Solid Conductors: ASTM B 3.
2. Stranded Conductors: ASTM B 8.
3. Tinned Conductors: ASTM B 33.
4. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch in diameter.
5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
6. Bonding Jumper: Copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.
7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches wide and 1/16 inch thick.

2.2 CONNECTORS

A. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.

B. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, bolted pressure-type, with at least two bolts.

1. Pipe Connectors: Clamp type, sized for pipe.

C. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

2.3 GROUNDING ELECTRODES

A. Ground Rods: Copper-clad, 3/4 inch by10 feet in diameter.

PART 3 - EXECUTION

3.1 APPLICATIONS

A. Conductors: Install solid conductor for No.8 AWG and smaller, and stranded conductors for No.6 AWG and larger, unless otherwise indicated.

B. Underground Grounding Conductors: Install bare copper conductor, No. 2/0 AWG minimum. Bury at least 24 inches below grade.

C. Isolated Grounding Conductors: Green-colored insulation with continuous yellow stripe. On feeders with isolated ground, identify grounding conductor where visible to normal inspection, with alternating bands of green and yellow tape, with at least three bands of green and two bands of yellow.

D. Conductor Terminations and Connections:

1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
2. Underground Connections: Welded connectors, except at test wells and as otherwise indicated.
3. Connections to Ground Rods at Test Wells: Bolted connectors.
4. Connections to Structural Steel: Welded connectors.

3.2 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:

1. Feeders and branch circuits.
2. Lighting circuits.
3. Receptacle circuits.
4. Single-phase motor and appliance branch circuits.
5. Three-phase motor and appliance branch circuits.
6. Flexible raceway runs.
7. Armored and metal-clad cable runs.
8. Busway Supply Circuits: Install insulated equipment grounding conductor from grounding bus in the switchgear, switchboard, or distribution panel to equipment grounding bar terminal on busway.

9. Computer and Rack-Mounted Electronic Equipment Circuits: Install insulated equipment grounding conductor in branch-circuit runs from equipment-area power panels and power-distribution units.
10. X-Ray Equipment Circuits: Install insulated equipment grounding conductor in circuits supplying x-ray equipment.

B. Air-Duct Equipment Circuits: Install insulated equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners, heaters, dampers, humidifiers, and other duct electrical equipment. Bond conductor to each unit and to air duct and connected metallic piping.

C. Water Heater, Heat-Tracing, and Antifrost Heating Cables: Install a separate insulated equipment grounding conductor to each electric water heater and heat-tracing cable. Bond conductor to heater units, piping, connected equipment, and components.

D. Signal and Communication Equipment: For telephone, alarm, voice and data, and other communication equipment, provide No. 4 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each service location, terminal cabinet, wiring closet, and central equipment location.

1. Service and Central Equipment Locations and Wiring Closets: Terminate grounding conductor on a 1/4-by-2-by-12-inch grounding bus.
2. Terminal Cabinets: Terminate grounding conductor on cabinet grounding terminal.

E. Metal Poles Supporting Outdoor Lighting Fixtures: Install grounding electrode and a separate insulated equipment grounding conductor in addition to grounding conductor installed with branch-circuit conductors.

3.3 INSTALLATION

A. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

B. Ground Rods: Drive rods until tops are 2 inches below finished floor or final grade, unless otherwise indicated.

1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating, if any.
2. For grounding electrode system, install at least three rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.

C. Test Wells: Ground rod driven through drilled hole in bottom of handhole. Handholes are specified in Division 26 Section "Underground Ducts and Raceways for Electrical Systems," and shall be at least 12 inches deep, with cover.

1. Test Wells: Install at least one test well for each service, unless otherwise indicated. Install at the ground rod electrically closest to service entrance. Set top of test well flush with finished grade or floor.

D. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.

1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install so vibration is not transmitted to rigidly mounted equipment.
3. Use exothermic-welded connectors for outdoor locations, but if a disconnect-type connection is required, use a bolted clamp.

E. Grounding and Bonding for Piping:

1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes, using a bolted clamp connector or by bolting a lug-type connector to a pipe flange, using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
2. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.
3. Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.

F. Bonding Interior Metal Ducts: Bond metal air ducts to equipment grounding conductors of associated fans, blowers, electric heaters, and air cleaners. Install tinned bonding jumper to bond across flexible duct connections to achieve continuity.

3.4 FIELD QUALITY CONTROL

A. Perform the following tests and inspections and prepare test reports:

1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
2. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, and at ground test wells.

a. Measure ground resistance not less than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
b. Perform tests by fall-of-potential method according to IEEE 81.

B. Report measured ground resistances that exceed the following values:

1. Power and Lighting Equipment or System with Capacity 500 kVA and Less: 10 ohms.
2. Power and Lighting Equipment or System with Capacity 500 to 1000 kVA: 5 ohms.
3. Power and Lighting Equipment or System with Capacity More Than 1000 kVA: 3 ohms.
4. Power Distribution Units or Panelboards Serving Electronic Equipment: 3 ohm(s).

C. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

END OF SECTION 260526

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PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Hangers and supports for electrical equipment and systems.
2. Construction requirements for concrete bases.

1.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design supports for multiple raceways, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.

C. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

D. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

E. Comply with all Seismic Requirements.

1.3 SUBMITTALS

A. Product Data: For steel slotted support systems.

B. Shop Drawings: Show fabrication and installation details and include calculations for the following:

1. Trapeze hangers. Include Product Data for components.
2. Steel slotted channel systems. Include Product Data for components.
3. Equipment supports.

C. Welding certificates.

1.4 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Allied Tube & Conduit.
b. Cooper B-Line, Inc.; a division of Cooper Industries.
c. ERICO International Corporation.
d. GS Metals Corp.
e. Thomas & Betts Corporation.
f. Unistrut; Tyco International, Ltd.
g. Wesanco, Inc.

3. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
4. Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
5. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
6. Channel Dimensions: Selected for applicable load criteria.

B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.

C. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

D. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.

E. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

F. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.

a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
b. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1) Hilti Inc.
2) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
3) MKT Fastening, LLC.
4) Simpson Strong-Tie Co., Inc.; Masterset Fastening Systems Unit

2. Mechanical-Expansion Anchors: Insert-wedge-type, stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.

a. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
b. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1) Cooper B-Line, Inc.; a division of Cooper Industries.
2) Empire Tool and Manufacturing Co., Inc.
3) Hilti Inc.
4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
5) MKT Fastening, LLC.

3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.
7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.

B. Materials: Comply with requirements in Division 05 Section "Metal Fabrications" for steel shapes and plates.

PART 3 - EXECUTION

3.1 APPLICATION

A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.

B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch in diameter.

C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted [or other]support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

1. Secure raceways and cables to these supports with two-bolt conduit clamps.

D. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

3.2 SUPPORT INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

B. Raceway Support Methods: In addition to methods described in NECA 1, EMT, IMC, and RMC may be supported by openings through structure members, as permitted in NFPA 70.

C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.

D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.
2. To New Concrete: Bolt to concrete inserts.
3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
4. To Existing Concrete: Expansion anchor fasteners.
5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches thick.
6. To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts.
7. To Light Steel: Sheet metal screws.
8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate.

E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

A. Comply with installation requirements in Division 05 Section "Metal Fabrications" for site-fabricated metal supports.

B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

C. Field Welding: Comply with AWS D1.1/D1.1M.

3.4 CONCRETE BASES

A. Construct concrete bases of dimensions indicated but not less than 4 inches larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.

B. Use 3000-psi , 28-day compressive-strength concrete. Concrete materials, reinforcement, and placement requirements are specified in Division 03 Section Miscellaneous Cast-in-Place Concrete.

C. Anchor equipment to concrete base.

1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor bolts to elevations required for proper attachment to supported equipment.
3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.5 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.

B. Touchup: Comply with requirements in Division 09 painting Sections for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION 260529

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PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.

B. See Division 26 Section "Underground Ducts and Raceways for Electrical Systems" for exterior ductbanks and manholes, and underground handholes, boxes, and utility construction.

1.2 SUBMITTALS

A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.

B. Shop Drawings: For custom enclosures and cabinets. Include plans, elevations, sections, details, and attachments to other work.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 METAL CONDUIT AND TUBING

A. Rigid Steel Conduit: ANSI C80.1.

B. IMC: ANSI C80.6.

C. EMT: ANSI C80.3.

D. FMC: Zinc-coated steel.

E. LFMC: Flexible steel conduit with PVC jacket.

F. Fittings for Conduit (Including all Types and Flexible and Liquidtight), EMT, and Cable: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.

1. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886.
2. Fittings for EMT: Steel or die-cast, compression type.

2.2 NONMETALLIC CONDUIT AND TUBING

A. ENT: NEMA TC 13.

B. RNC: NEMA TC 2, Type EPC-40-PVC, unless otherwise indicated.

C. LFNC: UL 1660.

D. Fittings for ENT and RNC: NEMA TC 3; match to conduit or tubing type and material.

E. Fittings for LFNC: UL 514B.

2.3 BOXES, ENCLOSURES, AND CABINETS

A. Sheet Metal Outlet and Device Boxes: NEMA OS 1.

B. Cast-Metal Outlet and Device Boxes: NEMA FB 1, aluminum, Type FD, with gasketed cover.

C. Nonmetallic Outlet and Device Boxes: NEMA OS 2.

D. Metal Floor Boxes: Cast metal, fully adjustable, rectangular.

E. Nonmetallic Floor Boxes: Nonadjustable, round.

F. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

G. Cast-Metal Access, Pull, and Junction Boxes: NEMA FB 1, cast aluminum with gasketed cover.

H. Hinged-Cover Enclosures: NEMA 250, Type 1, with continuous-hinge cover with flush latch, unless otherwise indicated.

1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
2. Nonmetallic Enclosures: Plastic.

I. Cabinets:

1. NEMA 250, Type 1, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
2. Hinged door in front cover with flush latch and concealed hinge.
3. Key latch to match panelboards.
4. Metal barriers to separate wiring of different systems and voltage.
5. Accessory feet where required for freestanding equipment.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

A. Outdoors: Apply raceway products as specified below, unless otherwise indicated:

1. Exposed Conduit: Rigid steel conduit or IMC.
2. Concealed Conduit, Aboveground: rigid steel conduit, IMC or EMT.

3. Underground Conduit: RNC, Type EPC-40PVC, direct buried.
4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFNC.
5. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.

B. Comply with the following indoor applications, unless otherwise indicated:

1. Exposed, Not Subject to Physical Damage: EMT.
2. Exposed, Not Subject to Severe Physical Damage: EMT.
3. Exposed and Subject to Severe Physical Damage: Rigid steel conduit or IMC. Includes raceways in the following locations:

   a. Loading dock.
   b. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
   c. Mechanical rooms.

4. Concealed in Ceilings and Interior Walls and Partitions: EMT.
5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
6. Damp or Wet Locations: Rigid steel conduit or IMC.
7. Raceways for Optical Fiber or Communications Cable: EMT.
8. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4, stainless steel in damp or wet locations.

C. Minimum Raceway Size: 3/4-inch trade size.

D. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.

3.2 INSTALLATION

A. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.

B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

C. Complete raceway installation before starting conductor installation.

D. Support raceways as specified in Division 26 Section "Hangers and Supports for Electrical Systems." Comply with all Seismic requirements.

E. Arrange stub-ups so curved portions of bends are not visible above the finished slab.

F. Install no more than the equivalent of three 90-degree bends in any conduit run except for communications conduits, for which fewer bends are allowed.

G. Conceal conduit and EMT within finished walls, ceilings, and floors, unless otherwise indicated.

H. Raceways Embedded in Slabs:

1. Run conduit larger than 1-inch trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.
2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.
3. Change from ENT to RNC, Type EPC-40-PVC, rigid steel conduit, or IMC before rising above the floor.

I. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors, including conductors smaller than No. 4 AWG.

J. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire.

K. Raceways for Communications Cable: Install as follows:

1. 3/4-Inch Trade Size and Smaller: Install raceways in maximum lengths of 50 feet.
2. 1-Inch Trade Size and Larger: Install raceways in maximum lengths of 75 feet.
3. Install with a maximum of two 90-degree bends or equivalent for each length of raceway unless Drawings show stricter requirements. Separate lengths with pull or junction boxes or terminations at distribution frames or cabinets where necessary to comply with these requirements.

L. Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:

1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
2. Where otherwise required by NFPA 70.

M. Expansion-Joint Fittings for RNC: Install in each run of aboveground conduit that is located where environmental temperature change may exceed 30 deg F and that has straight-run length that exceeds 25 feet.

1. Install expansion-joint fittings for each of the following locations, and provide type and quantity of fittings that accommodate temperature change listed for location:

a. Outdoor Locations Not Exposed to Direct Sunlight: 125 deg F temperature change.
b. Outdoor Locations Exposed to Direct Sunlight: 155 deg F temperature change.
c. Indoor Spaces: Connected with the Outdoors without Physical Separation: 125 deg F temperature change.
d. Attics: 135 deg F temperature change.

2. Install fitting(s) that provide expansion and contraction for at least 0.00041 inch per foot of length of straight run per deg F of temperature change.
3. Install each expansion-joint fitting with position, mounting, and piston setting selected according to manufacturer's written instructions for conditions at specific location at the time of installation.

N. Flexible Conduit Connections: Use maximum of 72 inches of flexible conduit for equipment subject to vibration, noise transmission, or movement; and for transformers and motors.

1. Use LFMC in damp or wet locations subject to severe physical damage.
2. Use LFMC or LFNC in damp or wet locations not subject to severe physical damage.

O. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall.

P. Set metal floor boxes level and flush with finished floor surface.

Q. Set nonmetallic floor boxes level. Trim after installation to fit flush with finished floor surface.

3.3 INSTALLATION OF UNDERGROUND CONDUIT

A. Direct-Buried Conduit:

1. Excavate trench bottom to provide firm and uniform support for conduit. Prepare trench bottom as specified in Division 31 Section "Earth Moving" for pipe less than 6 inches in nominal diameter.
2. Install backfill as specified in Division 31 Section "Earth Moving."
3. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand tamp backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction as specified in Division 31 Section "Earth Moving."
4. Install manufactured duct elbows for stub-ups at poles and equipment and at building entrances through the floor, unless otherwise indicated. Encase elbows for stub-up ducts throughout the length of the elbow.
5. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through the floor.

    a. Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches of concrete.
    b. For stub-ups at equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches from edge of equipment pad or foundation. Install insulated grounding bushings on terminations at equipment.

6. Warning Planks: Bury warning planks approximately 12 inches above direct-buried conduits, placing them 24 inches o.c. Align planks along the width and along the centerline of conduit.

3.4 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Penetration Firestopping."

END OF SECTION 260533

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PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Identification for raceways.
2. Identification of power and control cables.
3. Identification for conductors.
4. Underground-line warning tape.
5. Warning labels and signs.
6. Instruction signs.
7. Equipment identification labels.
8. Miscellaneous identification products.

1.2 SUBMITTALS

A. Product Data: For each electrical identification product indicated.

1.3 QUALITY ASSURANCE

A. Comply with ANSI A13.1.

B. Comply with NFPA 70.

C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.

D. Comply with ANSI Z535.4 for safety signs and labels.

E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

PART 2 - PRODUCTS

2.1 POWER RACEWAY IDENTIFICATION MATERIALS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway size.

B. Colors for Raceways Carrying Circuits at 600 V or Less:

1. Black letters on an orange field.
2. Legend: Indicate voltage and system or service type.

C. Self-Adhesive Vinyl Labels for Raceways Carrying Circuits at 600 V or Less: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

D. Snap-Around Labels for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

E. Snap-Around, Color-Coding Bands for Raceways Carrying Circuits at 600 V or Less: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

F. Write-On Tags: Polyester tag, 0.015 inch thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.

1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.
2. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

2.2 ARMORED AND METAL-CLAD CABLE IDENTIFICATION MATERIALS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.

B. Colors for Raceways Carrying Circuits at 600 V and Less:

1. Black letters on an orange field.
2. Legend: Indicate voltage and system or service type.

C. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

D. Self-Adhesive Vinyl Tape: Colored, heavy duty, waterproof, fade resistant; 2 inches wide; compounded for outdoor use.

2.3 POWER AND CONTROL CABLE IDENTIFICATION MATERIALS

A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.

B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

C. Write-On Tags: Polyester tag, 0.015 inch thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.

1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.
2. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

D. Snap-Around Labels: Slit, pretensioned, flexible, preprinted, color-coded acrylic sleeve, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

E. Snap-Around, Color-Coding Bands: Slit, pretensioned, flexible, solid-colored acrylic sleeve, 2 inches long, with diameter sized to suit diameter of raceway or cable it identifies and to stay in place by gripping action.

2.4 CONDUCTOR IDENTIFICATION MATERIALS

A. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.

B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

C. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

D. Write-On Tags: Polyester tag, 0.015 inch thick, with corrosion-resistant grommet and cable tie for attachment to conductor or cable.

1. Marker for Tags: Permanent, waterproof, black ink marker recommended by tag manufacturer.
2. Marker for Tags: Machine-printed, permanent, waterproof, black ink marker recommended by printer manufacturer.

2.5 FLOOR MARKING TAPE

A. 2-inch wide, 5-mil pressure-sensitive vinyl tape, with black and white stripes and clear vinyl overlay.

2.6 UNDERGROUND-LINE WARNING TAPE

A. Tape:

1. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical and communications utility lines.
2. Printing on tape shall be permanent and shall not be damaged by burial operations.
3. Tape material and ink shall be chemically inert, and not subject to degrading when exposed to acids, alkalis, and other destructive substances commonly found in soils.

B. Color and Printing:

1. Comply with ANSI Z535.1 through ANSI Z535.5.
2. Inscriptions for Red-Colored Tapes: ELECTRIC LINE, HIGH VOLTAGE.
3. Inscriptions for Orange-Colored Tapes: TELEPHONE CABLE, CATV CABLE, COMMUNICATIONS CABLE, OPTICAL FIBER CABLE.

2.7 WARNING LABELS AND SIGNS

A. Comply with NFPA 70 and 29 CFR 1910.145.

B. Self-Adhesive Warning Labels: Factory-printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment unless otherwise indicated.

C. Baked-Enamel Warning Signs:

1. Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.
2. 1/4-inch grommets in corners for mounting.
3. Nominal size, 7 by 10 inches.

D. Metal-Backed, Butyrate Warning Signs:

1. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch galvanized-steel backing; and with colors, legend, and size required for application.
2. 1/4-inch grommets in corners for mounting.
3. Nominal size, 10 by 14 inches.

E. Warning label and sign shall include, but are not limited to, the following legends:

1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES.

2.8 INSTRUCTION SIGNS

A. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch thick for signs up to 20 sq. inches and 1/8 inch thick for larger sizes.

1. Engraved legend with black letters on white face.
2. Punched or drilled for mechanical fasteners.
3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

B. Adhesive Film Label: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch.

C. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch. Overlay shall provide a weatherproof and UV-resistant seal for label.

2.9 EQUIPMENT IDENTIFICATION LABELS

A. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch. Overlay shall provide a weatherproof and UV-resistant seal for label.

B. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch.

C. Stenciled Legend: In nonfading, waterproof, black ink or paint. Minimum letter height shall be 1 inch.

2.10 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Paint: Comply with requirements in Division 09 painting Sections for paint materials and application requirements. Select paint system applicable for surface material and location (exterior or interior).

B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.

B. Apply identification devices to surfaces that require finish after completing finish work.

C. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.

D. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.

E. System Identification Color-Coding Bands for Raceways and Cables: Each color-coding band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.

F. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches below finished grade. Use multiple tapes where width of multiple lines installed in a common trench exceeds 16 inches overall.

G. Painted Identification: Comply with requirements in Division 09 painting Sections for surface preparation and paint application.

3.2 IDENTIFICATION SCHEDULE

A. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits More Than 30A, and 120v to ground: Install labels at 30-foot maximum intervals.

B. Accessible Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive vinyl labels with the wiring system legend and system voltage. System legends shall be as follows:

1. Emergency Power.
2. Power.
3. UPS.

C. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.

1. Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for ungrounded feeder and branch-circuit conductors.

a. Color shall be factory applied or field applied for sizes larger than No. 8 AWG, if authorities having jurisdiction permit.
b. Colors for 208/120-V Circuits:

1) Phase A: Black.
2) Phase B: Red.
3) Phase C: Blue.

c. Colors for 480/277-V Circuits:

1) Phase A: Brown.
2) Phase B: Orange.
3) Phase C: Yellow.

d. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.

D. Install instructional sign including the color-code for grounded and ungrounded conductors using adhesive-film-type labels.

E. Conductors to Be Extended in the Future: Attach marker tape to conductors and list source.

F. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.

1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual.

G. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable.

1. Limit use of underground-line warning tape to direct-buried cables.
2. Install underground-line warning tape for both direct-buried cables and cables in raceway.

H. Workspace Indication: Install floor marking tape to show working clearances in the direction of access to live parts. Workspace shall be as required by NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.

I. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Baked-enamel warning sign.

1. Comply with 29 CFR 1910.145.
2. Identify system voltage with black letters on an orange background.
3. Apply to exterior of door, cover, or other access.
4. For equipment with multiple power or control sources, apply to door or cover of equipment including, but not limited to, the following:

    a. Power transfer switches.
    b. Controls with external control power connections.

J. Operating Instruction Signs: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.

K. Emergency Operating Instruction Signs: Install instruction signs with white legend on a red background with minimum 3/8-inch- high letters for emergency instructions at equipment used for.

L. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.

1. Labeling Instructions:

    a. Indoor Equipment: Adhesive film label. Unless otherwise indicated, provide a single line of text with 1/2-inch high letters on 1-1/2-inch high label; where two lines of text are required, use labels 2 inches high.
    b. Outdoor Equipment: Engraved, laminated acrylic or melamine label Stenciled legend 4 inches high.
    c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
    d. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.

END OF SECTION 260553

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PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following lighting control devices:
   1. Indoor occupancy sensors.
   2. Daylight sensors
   3. Lighting control systems and components

B. See drawing details and notes for "Network Lighting Controls" for low-voltage, manual and programmable lighting control systems.

C. See Division 26 Section "Wiring Devices" for wall-box dimmers, wall-switch occupancy sensors, and manual light switches.

D. All systems, controls, devices, components etc. shall meet California Title 24 requirements.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Field quality-control test reports.

C. Operation and maintenance data.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 2 - PRODUCTS

2.1 LIGHTING CONTROL SYSTEMS AND COMPONENTS

A. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product deemed equivalent by engineer::

2.2 INDOOR OCCUPANCY SENSORS

A. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product deemed equivalent by engineer:
   1. Lithonia Lighting; Acuity Lighting Group, Inc.
   2. Sensor Switch, Inc.
   3. Watt Stopper (The).

B. General Description: Wall- or ceiling-mounting, solid-state units with a separate relay unit.

1. Operation: As indicated on drawings and notes
2. Sensor Output: Contacts rated to operate the connected relay, complying with UL 773A. Sensor shall be powered from the relay unit.
3. Relay Unit: Dry contacts rated for 20-A ballast load at 120- and 277-V ac, for 13-A tungsten at 120-V ac, and for 1 hp at 120-V ac. Power supply to sensor shall be 24-V dc, 150-mA, Class 2 power source as defined by NFPA 70.
4. Mounting:

    a. Sensor: Suitable for mounting in any position on a standard outlet box.
    b. Relay: Externally mounted through a 1/2-inch knockout in a standard electrical enclosure.
    c. Time-Delay and Sensitivity Adjustments: Recessed and concealed behind hinged door.

5. Indicator: LED, to show when motion is being detected during testing and normal operation of the sensor.
6. Bypass Switch: Override the on function in case of sensor failure.
7. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc; Provide 0-10vdc dimming control with adjustable daylighting discount factor.

C. PIR/SOUND Dual detection Type: Ceiling mounting; detect occupancy by sensing a combination of heat, movement and sound in area of coverage.

1. Detector Sensitivity: Detect occurrences of 6-inch minimum movement of any portion of a human body that presents a target of not less than 36 sq. in.
2. Detection Coverage (Room): Detect occupancy anywhere in a circular area of 1000 sq. ft when mounted on a 96-inch high ceiling.
3. Detection Coverage (Corridor): Detect occupancy within 90 feet when mounted on a 10-foot high ceiling.

2.3 OUTDOOR PHOTOELECTRIC SWITCHES

A. Basis-of-Design Product: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
1. Intermatic, Inc.
2. Lithonia Lighting; Acuity Lighting Group, Inc.
3. Paragon Electric Co.; Invensys Climate Controls.
4. Square D; Schneider Electric.
5. TORK.
6. Watt Stopper (The).

B. Description: Solid state, with SPST dry contacts rated for 1800-VA tungsten or 1000-VA inductive, to operate connected relay, contactor coils, or microprocessor input; complying with UL 773A.

1. Light-Level Monitoring Range: 1.5 to 10 fc, with an adjustment for turn-on and turn-off levels within that range, and a directional lens in front of photocell to prevent fixed light sources from causing turn-off.
2. Time Delay: 15-second minimum, to prevent false operation.
3. Surge Protection: Metal-oxide varistor, complying with IEEE C62.41.1, IEEE C62.41.2, and IEEE 62.45 for Category A1 locations.

4. Mounting: Twist lock complying with IEEE C136.10, with base-and-stem mounting or stem-and-swivel mounting accessories as required to direct sensor to the north sky exposure.

C. Description: Solid state, with SPST dry contacts rated for 1800 VA to operate connected load, relay, or contactor coils; complying with UL 773.

1. Light-Level Monitoring Range: 1.5 to 10 fc, with an adjustment for turn-on and turn-off levels within that range.
2. Time Delay: 30-second minimum, to prevent false operation.
3. Lightning Arrester: Air-gap type.
4. Mounting: Twist lock complying with IEEE C136.10, with base.

D. Description: Electrically operated and electrically held, combination type with fusible switch, complying with NEMA ICS 2 and UL 508.

1. Current Rating for Switching: Listing or rating consistent with type of load served, including tungsten filament, inductive, and high-inrush ballast (ballast with 15 percent or less total harmonic distortion of normal load current).
2. Fault Current Withstand Rating: Equal to or exceeding the available fault current at the point of installation.
3. Enclosure: Comply with NEMA 250.
4. Provide with control and pilot devices as indicated on Drawings matching the NEMA type specified for the enclosure.

2.4 CONDUCTORS AND CABLES

A. Power Wiring to Supply Side of Remote-Control Power Sources: Not smaller than No. 12 AWG. Comply with requirements in Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

B. Classes 2 and 3 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 18AWG. Comply with requirements in Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

C. Class 1 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No.14AWG. Comply with requirements in Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

PART 3 - EXECUTION

3.1 SENSOR INSTALLATION

A. Install and aim sensors in locations to achieve not less than 90 percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.

B. When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting sensors to suit actual occupied conditions. Provide up to two visits to Project during other than normal occupancy hours for this purpose.

3.2 WIRING INSTALLATION

A. Wiring Method: Comply with Division 26 Section "Low-Voltage Electrical Power Conductors and Cables." Minimum conduit size shall be 1/2 inch.

B. Wiring within Enclosures: Comply with NECA 1. Separate power-limited and nonpower-limited conductors according to conductor manufacturer's written instructions.

C. Size conductors according to lighting control device manufacturer's written instructions, unless otherwise indicated.

D. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

3.3 IDENTIFICATION

A. Identify components and power and control wiring according to Division 26 Section "Identification for Electrical Systems."

1. Identify controlled circuits in lighting contactors.
2. Identify circuits or luminaries controlled by photoelectric and occupancy sensors at each sensor.

B. Label components with a unique designation.

3.4 FIELD QUALITY CONTROL

A. Perform the following field tests and inspections and prepare test reports:

1. After installing time switches and sensors, and after electrical circuitry has been energized, adjust and test for compliance with requirements.
2. Operational Test: Verify operation of each lighting control device, and adjust time delays.

B. Lighting control devices that fail tests and inspections are defective work.

END OF SECTION 260923

SECTION 262416 - PANELBOARDS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes distribution panelboards and lighting and appliance branch-circuit panelboards.

1.2 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Panelboards shall withstand the effects of earthquake motions determined according to SEI/ASCE 7.

1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For each panelboard and related equipment.

1. Include dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings.
2. Detail enclosure types and details for types other than NEMA 250, Type 1.
3. Detail bus configuration, current, and voltage ratings.
4. Short-circuit current rating of panelboards and overcurrent protective devices.
5. Include evidence of NRTL listing for series rating of installed devices.
6. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
7. Include wiring diagrams for power, signal, and control wiring.
8. Include time-current coordination curves for each type and rating of overcurrent protective device included in panelboards.

C. Seismic Qualification Certificates: Submit certification that panelboards, overcurrent protective devices, accessories, and components will withstand seismic forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."

D. Field quality-control reports.

E. Panelboard schedules for installation in panelboards.

F. Operation and maintenance data.

1.4 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NEMA PB 1.

C. Comply with NFPA 70.

1.5 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace transient voltage suppression devices that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR PANELBOARDS

A. Fabricate and test panelboards according to IEEE 344 to withstand seismic forces defined in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."

B. Enclosures: Flush- and surface mounted cabinets.

1. Rated for environmental conditions at installed location.

a. Indoor Dry and Clean Locations: NEMA 250, Type 1.
b. Outdoor Locations: NEMA 250, Type 3R.

2. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box.
3. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.
4. Directory Card: Inside panelboard door, mounted in transparent card holder.

C. Incoming Mains Location: Top and bottom.

D. Phase, Neutral, and Ground Buses: Hard-drawn copper, 98 percent conductivity.

E. Conductor Connectors: Suitable for use with conductor material and sizes.

1. Material: Hard-drawn copper, 98 percent conductivity.
2. Main and Neutral Lugs: Compression type.
3. Ground Lugs and Bus Configured Terminators: Compression type.
4. Feed-Through Lugs: Compression type, suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.
5. Subfeed (Double) Lugs: Compression type suitable for use with conductor material. Locate at same end of bus as incoming lugs or main device.

F. Service Equipment Label: NRTL labeled for use as service equipment for panelboards with one or more main service disconnecting and overcurrent protective devices.

G. Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.

H. Panelboard Short-Circuit Current Rating: Rated for series-connected system with integral or remote upstream overcurrent protective devices and labeled by an NRTL. Include size and type of allowable upstream and branch devices, and listed and labeled for series-connected short-circuit rating by an NRTL.

I. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical short-circuit current available at terminals.

2.2 DISTRIBUTION PANELBOARDS

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. Panelboards: NEMA PB 1, power and feeder distribution type.

C. Doors: Secured with vault-type latch with tumbler lock; keyed alike.

D. Mains: Circuit breaker.

E. Branch Overcurrent Protective Devices: For Circuit-Breaker Frame Sizes 125 A and Smaller: Bolt-on circuit breakers.

F. Branch Overcurrent Protective Devices: For Circuit-Breaker Frame Sizes Larger Than 125 A: Bolt-on circuit breakers; plug-in circuit breakers where individual positive-locking device requires mechanical release for removal.

G. Branch Overcurrent Protective Devices: Fused switches.

2.3 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Eaton Electrical Inc.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D;

B. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.

C. Mains: Circuit breaker or lug.

D. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.

E. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.

F. Column-Type Panelboards: Narrow gutter extension, with cover, to overhead junction box equipped with ground and neutral terminal buses.

2.4 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

C. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity to meet available fault currents.

1. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
2. Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.
3. Electronic trip circuit breakers with rms sensing; field-replaceable rating plug or field-replicable electronic trip; and the following field-adjustable settings:

    a. Instantaneous trip.
    b. Long- and short-time pickup levels.
    c. Long- and short-time time adjustments.
    d. Ground-fault pickup level, time delay, and I^2t response.

4. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller; let-through ratings less than NEMA FU 1, RK-5.
5. GFCI Circuit Breakers: Single- and two-pole configurations with Class A ground-fault protection (6-mA trip).
6. Ground-Fault Equipment Protection (GFEP) Circuit Breakers: Class B ground-fault protection (30-mA trip).
7. Arc-Fault Circuit Interrupter (AFCI) Circuit Breakers: Comply with UL 1699; 120/240-V, single-pole configuration.
8. Molded-Case Circuit-Breaker (MCCB) Features and Accessories:

    a. Standard frame sizes, trip ratings, and number of poles.
    b. Lugs: Compression style, suitable for number, size, trip ratings, and conductor materials.
    c. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge (HID) lighting circuits.
    d. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
    e. Communication Capability: Circuit-breaker-mounted communication module with functions and features compatible with power monitoring and control system specified in Division 26 Section "Electrical Power Monitoring and Control."

f. Shunt Trip: 120V trip coil energized from separate circuit, set to trip at [55] [75] percent of rated voltage.
g. Handle Padlocking Device: Fixed attachment, for locking circuit-breaker handle in on or off position.
h. Handle Clamp: Loose attachment, for holding circuit-breaker handle in on position.

D. Fused Switch: NEMA KS 1, Type HD; clips to accommodate specified fuses; lockable handle.

1. Fuses, and Spare-Fuse Cabinet: Comply with requirements specified in Division 26 Section "Fuses."

2.5 ACCESSORY COMPONENTS AND FEATURES

A. Portable Test Set: For testing functions of solid-state trip devices without removing from panelboard. Include relay and meter test plugs suitable for testing panelboard meters and switchboard class relays.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Receive, inspect, handle, store and install panelboards and accessories according to NECA 407.

B. Comply with mounting and anchoring requirements specified in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."

C. Mount top of trim 90 inches above finished floor unless otherwise indicated.

D. Mount panelboard cabinet plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.

E. Install overcurrent protective devices and controllers not already factory installed.

1. Set field-adjustable, circuit-breaker trip ranges.

F. Install filler plates in unused spaces.

G. Stub four 1-inch empty conduits from panelboard into accessible ceiling space or space designated to be ceiling space in the future. Stub four 1-inch empty conduits into raised floor space or below slab not on grade.

H. Arrange conductors in gutters into groups and bundle and wrap with wire ties.

I. Comply with NECA 1.

3.2 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Division 26 Section "Identification for Electrical Systems."

B. Create a directory to indicate installed circuit loads and incorporating Owner's final room designations. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.

C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

D. Device Nameplates: Label each branch circuit device in distribution panelboards with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Acceptance Testing Preparation:

1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
2. Test continuity of each circuit.

C. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

D. Panelboards will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report that identifies panelboards included and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

END OF SECTION 262416

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Receptacles, receptacles with integral GFCI, and associated device plates.
2. Wall-box motion sensors.
3. Snap switches and wall-box dimmers.
4. Solid-state fan speed controls.
5. Wall-switch and exterior occupancy sensors.
6. Communications outlets.

B. See Division 27 Section "Communications Horizontal Cabling" for workstation outlets.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.

C. Samples: One for each type of device and wall plate specified, in each color specified.

D. Operation and Maintenance Data: For wiring devices to include in all manufacturers' packing label warnings and instruction manuals that include labeling conditions.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:

1. Cooper Wiring Devices; a division of Cooper Industries, Inc. (Cooper).
2. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
3. Leviton Mfg. Company Inc. (Leviton).
4. Pass & Seymour/Legrand; Wiring Devices & Accessories (Pass & Seymour).

2.2 STRAIGHT BLADE RECEPTACLES

A. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:

    a. Cooper; 5351 (single), 5352 (duplex).
    b. Hubbell; HBL5351 (single), CR5352 (duplex).
    c. Leviton; 5891 (single), 5352 (duplex).
    d. Pass & Seymour; 5381 (single), 5352 (duplex).

2.3 GFCI RECEPTACLES

A. General Description: Straight blade, feed through type. Comply with NEMA WD 1, NEMA WD 6, UL 498, and UL 943, Class A, and include indicator light that is lighted when device is tripped.

B. Duplex GFCI Convenience Receptacles, 125 V, 20 A:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide one of the following:

    a. Cooper; GF20.
    b. Pass & Seymour; 2084.

2.4 SNAP SWITCHES

A. Comply with NEMA WD 1 and UL 20.

B. Switches, 120/277 V, 20 A:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
2. Products: Subject to compliance with requirements, provide switches as indicated on drawings and applicaton.

2.5 WALL-BOX DIMMERS

A. Switches as indicated on drawings.

2.6 WALL PLATES

A. Single and combination types to match corresponding wiring devices.

1. Plate-Securing Screws: Metal with head color to match plate finish.
2. Material for Finished Spaces: Smooth, high-impact thermoplastic 0.035-inch.
3. Material for Unfinished Spaces: Smooth, high-impact thermoplastic.

4. Material for Damp Locations: Thermoplastic with spring-loaded lift cover, and listed and labeled for use in "wet locations."

B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with type 3R weather-resistant thermoplastic with lockable cover.

2.7 FINISHES

A. Color: Wiring device catalog numbers in Section Text do not designate device color.

1. Wiring Devices Connected to Normal Power System: As selected by Architect, unless otherwise indicated or required by NFPA 70 or device listing.
2. Wiring Devices Connected to Emergency Power System: Red.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise noted.

B. Coordination with Other Trades:

1. Take steps to insure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.
2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
4. Install wiring devices after all wall preparation, including painting, is complete.

C. Conductors:

1. Do not strip insulation from conductors until just before they are spliced or terminated on devices.
2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
4. Existing Conductors:

a. Cut back and pigtail, or replace all damaged conductors.
b. Straighten conductors that remain and remove corrosion and foreign matter.
c. Pigtailing existing conductors is permitted provided the outlet box is large enough.

D. Device Installation:

1. Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.

2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
4. Connect devices to branch circuits using pigtails that are not less than 6 inches in length.
5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
6. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
8. Tighten unused terminal screws on the device.
9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.

E. Receptacle Orientation:

1. Install ground pin of vertically mounted receptacles up, and on horizontally mounted receptacles to the left.

F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

G. Dimmers:

1. Install dimmers within terms of their listing.
2. Verify that dimmers used for fan speed control are listed for that application.
3. Install unshared neutral conductors on line and load side of dimmers according to manufacturers' device listing conditions in the written instructions.

H. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

3.2 IDENTIFICATION

A. Comply with Division 26 Section "Identification for Electrical Systems."

1. Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine printing with white-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.

1. Test Instruments: Use instruments that comply with UL 1436.
2. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated LED indicators of measurement.

B. Tests for Convenience Receptacles:

1. Line Voltage: Acceptable range is 105 to 132 V.

2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is not acceptable.
3. Ground Impedance: Values of up to 2 ohms are acceptable.
4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
5. Using the test plug, verify that the device and its outlet box are securely mounted.
6. The tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new, and retest as specified above.

END OF SECTION 262726

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PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fusible switches.
2. Nonfusible switches.
3. Receptacle switches.
4. Shunt trip switches.
5. Molded-case circuit breakers (MCCBs).
6. Enclosures.

1.2 DEFINITIONS

A. NC: Normally closed.

B. NO: Normally open.

C. SPDT: Single pole, double throw.

1.3 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Enclosed switches and circuit breakers shall withstand the effects of earthquake motions determined according to **ASCE/SEI 7**.

1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."

1.4 SUBMITTALS

A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated.

B. Shop Drawings: For enclosed switches and circuit breakers. Include plans, elevations, sections, details, and attachments to other work.

1. Wiring Diagrams: For power, signal, and control wiring.

C. Seismic Qualification Certificates: For enclosed switches and circuit breakers, accessories, and components, from manufacturer.

D. Field quality-control reports.

E. Operation and maintenance data.

1.5 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 FUSIBLE SWITCHES

A. Basis-of-Design Product: Subject to compliance with requirements, provide **product indicated on Drawings** or comparable product by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. Type GD, General Duty, Single Throw, 240-V ac, 800 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with cartridge fuse interiors to accommodate **indicated** fuses, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.

C. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
3. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
4. Lugs: Suitable for number, size, and conductor material.
5. Service-Rated Switches: Labeled for use as service equipment.

2.2 MOLDED-CASE CIRCUIT BREAKERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide **product indicated on Drawings** or comparable product by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial - Electrical Distribution.
3. Siemens Energy & Automation, Inc.
4. Square D; a brand of Schneider Electric.

B. General Requirements: Comply with UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents.

C. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.

D. Electronic Trip Circuit Breakers: Field-replaceable rating plug, rms sensing, with the following field-adjustable settings:

1. Instantaneous trip.
2. Long- and short-time pickup levels.
3. Long- and short-time time adjustments.
4. Ground-fault pickup level, time delay, and I^2t response.

E. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller, and let-through ratings less than NEMA FU 1, RK-5.

F. Features and Accessories:

1. Standard frame sizes, trip ratings, and number of poles.
2. Lugs: Suitable for number, size, trip ratings, and conductor material.
3. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge lighting circuits.
4. Ground-Fault Protection: Comply with UL 1053; **integrally mounted, self-powered** type with mechanical ground-fault indicator; relay with adjustable pickup and time-delay settings, push-to-test feature, internal memory, and shunt trip unit; and three-phase, zero-sequence current transformer/sensor.
5. Shunt Trip: Trip coil energized from separate circuit, with coil-clearing contact.
6. Auxiliary Contacts: **One SPDT switch** with "a" and "b" contacts; "a" contacts mimic circuit-breaker contacts, "b" contacts operate in reverse of circuit-breaker contacts.
7. Alarm Switch: One **NO** contact that operates only when circuit breaker has tripped.

2.3 ENCLOSURES

A. Enclosed Switches and Circuit Breakers: NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.

1. Indoor, Dry and Clean Locations: NEMA 250, **Type 1**.
2. Outdoor Locations: NEMA 250, **Type 3R**.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.

B. Comply with mounting and anchoring requirements specified in Division 26 Section "Vibration and Seismic Controls for Electrical Systems."

C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.

D. Install fuses in fusible devices.

E. Comply with NECA 1.

3.2 IDENTIFICATION

A. Comply with requirements in Division 26 Section "Identification for Electrical Systems."

1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
2. Label each enclosure with engraved metal or laminated-plastic nameplate.

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Acceptance Testing Preparation:

1. Test insulation resistance for each enclosed switch and circuit breaker, component, connecting supply, feeder, and control circuit.
2. Test continuity of each circuit.

C. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

D. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report that identifies enclosed switches and circuit breakers and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

END OF SECTION 262816

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Diesel engine.
2. Diesel fuel-oil system.
3. Control and monitoring.
4. Generator overcurrent and fault protection.
5. Generator, exciter, and voltage regulator.
6. Load bank.
7. Outdoor engine generator enclosure.
8. Vibration isolation devices.

B. Related Requirements:

1. Section 263600 "Transfer Switches" for transfer switches including sensors and relays to initiate automatic-starting and -stopping signals for engine generators.

1.2 DEFINITIONS

A. EPS: Emergency power supply.

B. EPSS: Emergency power supply system.

C. Operational Bandwidth: The total variation from the lowest to highest value of a parameter over the range of conditions indicated, expressed as a percentage of the nominal value of the parameter.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
2. Include thermal damage curve for generator.
3. Include time-current characteristic curves for generator protective device.
4. Include fuel consumption in gallons per hour at 0.8 power factor at 0.5, 0.75, and 1.0 times generator capacity.
5. Include generator efficiency at 0.8 power factor at 0.5, 0.75, and 1.0 times generator capacity.
6. Include airflow requirements for cooling and combustion air in cubic feet per minute at 0.8 power factor, with air-supply temperature of 95, 80, 70, and 50 deg F. Provide Drawings indicating requirements and limitations for location of air intake and exhausts.
7. Include generator characteristics, including, but not limited to, kilowatt rating, efficiency, reactances, and short-circuit current capability.

B. Shop Drawings:

1. Include plans and elevations for engine generator and other components specified. Indicate access requirements affected by height of subbase fuel tank.
2. Include details of equipment assemblies. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Identify fluid drain ports and clearance requirements for proper fluid drain.
4. Design calculations for selecting vibration isolators and seismic restraints and for designing vibration isolation bases.
5. Vibration Isolation Base Details: Detail fabrication including anchorages and attachments to structure and to supported equipment. Include base weights.
6. Include diagrams for power, signal, and control wiring. Complete schematic, wiring, and interconnection diagrams indicating terminal markings for engine generators and functional relationship between all electrical components.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data:

B. Seismic Qualification Data: Certificates, for engine generator, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: With engine and generator mounted on rails, identify center of gravity and total weight**,** including full fuel tank, supplied enclosure, external silencer, subbase-mounted fuel tank, and each piece of equipment not integral to the engine generator, and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

C. Source Quality-Control Reports: Including, but not limited to, the following:

1. Certified summary of prototype-unit test report.
2. Certified Test Reports: For components and accessories that are equivalent, but not identical, to those tested on prototype unit.
3. Report of factory test on units to be shipped for this Project, indicating evidence of compliance with specified requirements.
4. Report of sound generation.
5. Report of exhaust emissions indicating compliance with applicable regulations.
6. Certified Torsional Vibration Compatibility: Comply with NFPA 110.

D. Field quality-control reports.

E. Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For packaged engine generators to include in emergency, operation, and maintenance manuals.

1. In addition to items specified in Section 017823 "Operation and Maintenance Data," include the following:

    a. List of tools and replacement items recommended to be stored at Project for ready access. Include part and drawing numbers, current unit prices, and source of supply.
    b. Operating instructions laminated and mounted adjacent to generator location.
    c. Training plan.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Fuses: One for every 10 of each type and rating, but no fewer than one of each.
2. Indicator Lamps: Two for every six of each type used, but no fewer than two of each.
3. Filters: One set each of lubricating oil, fuel, and combustion-air filters.
4. Tools: Each tool listed by part number in operations and maintenance manual.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: Current certificate holder for compliance with ISO 9001.

B. Installer Qualifications: An authorized representative who is trained and approved by manufacturer.

C. Testing Agency Qualifications: Accredited by NETA.

1. Testing Agency's Field Supervisor: Certified by NETA to supervise on-site testing.

1.8 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace components of packaged engine generators and associated auxiliary components that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 5 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Generac Power Systems, Inc.; SD series or comparable product by one of the following:

B. Source Limitations: Obtain packaged engine generators and auxiliary components from single source from single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Engine generator housing, subbase fuel tank, day tank, engine generator, batteries, battery racks, silencers, sound attenuating equipment, accessories, and components to withstand the effects of earthquake motions determined in accordance with ASCE/SEI 7 **.**

1. The term "withstand" means "the unit will remain in place without separation of any parts when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."
2. Shake-table testing shall comply with ICC-ES AC156. Testing shall be performed with all fluids at worst-case normal levels.
3. For life-safety components required to function after an earthquake (such as fire-sprinkler systems, components that contain hazardous content, and storage racks in structures open to the public), the Component Importance Factor is 1.5. For other components, the Component Importance Factor is 1.0 unless the structure is in Seismic Use Group III and component is necessary for continued operation of facility or failure of component could impair continued operation of facility, in which case the Component Importance Factor is 1.5.
4. Component Importance Factor: 1.5

B. NFPA Compliance:

1. Comply with NFPA 37.
2. Comply with NFPA 70.
3. Comply with NFPA 99.

C. UL Compliance: Comply with UL 2200.

D. Engine Exhaust Emissions: Comply with EPA Tier 2 requirements and applicable state and local government requirements.

E. Noise Emission: Comply with applicable state and local government requirements for maximum noise level at adjacent property boundaries due to sound emitted by engine generator including engine, engine exhaust, engine cooling-air intake and discharge, and other components of installation.

F. Environmental Conditions: Engine generator system shall withstand the following environmental conditions without mechanical or electrical damage or degradation of performance capability:

1. Ambient Temperature: **41 to 122 deg F**
2. Relative Humidity: Zero to 95 percent.

2.3 ENGINE GENERATOR ASSEMBLY DESCRIPTION

A. Factory-assembled and -tested, water-cooled engine, with brushless generator and accessories.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.

C. Power Rating: Standby.

D. EPSS Class: Engine generator shall be classified as a Class 2 in accordance with NFPA 110.

E. Service Load: 250 kVA.

F. Power Factor: .8 lagging.

G. Frequency: 60 Hz.

H. Voltage: 208V ac.

I. Phase: Three-phase, 4 wire,

J. Induction Method: Turbocharged.

K. Governor: Adjustable isochronous, with speed sensing.

L. Mounting Frame: Structural steel framework to maintain alignment of mounted components without depending on concrete foundation. Provide lifting attachments sized and spaced to prevent deflection of base during lifting and moving.

1. Rigging Diagram: Inscribed on metal plate permanently attached to mounting frame to indicate location and lifting capacity of each lifting attachment and engine generator center of gravity.

M. Capacities and Characteristics:

1. Power Output Ratings: Nominal ratings as indicated at 0.8 power factor excluding power required for the continued and repeated operation of the unit and auxiliaries[**,** with capacity as required to operate as a unit as evidenced by records of prototype testing].
2. Nameplates: For each major system component to identify manufacturer's name and address, and model and serial number of component.

N. Engine Generator Performance:

1. Steady-State Voltage Operational Bandwidth: 3 percent of rated output voltage from no load to full load.
2. Transient Voltage Performance: Not more than 20 percent variation for 50 percent step-load increase or decrease. Voltage shall recover and remain within the steady-state operating band within three seconds.
3. Steady-State Frequency Operational Bandwidth: 0.5 percent of rated frequency from no load to full load.
4. Steady-State Frequency Stability: When system is operating at any constant load within the rated load, there shall be no random speed variations outside the steady-state operational band and no hunting or surging of speed.
5. Transient Frequency Performance: Less than 5 percent variation for 50 percent step-load increase or decrease. Frequency shall recover and remain within the steady-state operating band within five seconds.
6. Output Waveform: At no load, harmonic content measured line to line or line to neutral shall not exceed 5 percent total and 3 percent for single harmonics. Telephone influence factor, determined in accordance with NEMA MG 1, shall not exceed 50 percent.
7. Sustained Short-Circuit Current: For a three-phase, bolted short circuit at system output terminals, system shall supply a minimum of 300 percent of rated full-load current for not less than 10 seconds and then clear the fault automatically, without damage to generator system components.
8. Start Time:

a. Comply with NFPA 110, Type 10 system requirements.

b. 10 seconds.

2.4 DIESEL ENGINE

A. Fuel: ASTM D975, diesel fuel oil, Grade 2-D S15.

B. Rated Engine Speed: 1800 rpm.

C. Lubrication System: Engine or skid-mounted.

1. Filter and Strainer: Rated to remove 90 percent of particles 5 micrometers and smaller while passing full flow.
2. Thermostatic Control Valve: Control flow in system to maintain optimum oil temperature. Unit shall be capable of full flow and is designed to be fail-safe.
3. Crankcase Drain: Arranged for complete gravity drainage to an easily removable container with no disassembly and without use of pumps, siphons, special tools, or appliances.

D. Jacket Coolant Heater: Electric-immersion type, factory installed in coolant jacket system. Comply with UL 499 and with NFPA 110 requirements for Level 1 equipment for heater capacity.

E. Integral Cooling System: Closed loop, liquid cooled, with radiator factory mounted on engine generator set mounting frame and integral engine-driven coolant pump.

1. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
2. Size of Radiator: Adequate to contain expansion of total system coolant from cold start to 110 percent load condition.
3. Expansion Tank: Constructed of welded steel plate and rated to withstand maximum closed-loop coolant system pressure for engine used. Equip with gauge glass and petcock.
4. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.
5. Maximum Ambient Operating Temperature: 122 deg F.
6. Coolant Hose: Flexible assembly with inside surface of nonporous rubber and outer covering of aging-, UV-, and abrasion-resistant fabric.

a. Rating: 50-psig maximum working pressure with coolant at 180 deg F, and non-collapsible under vacuum.
b. End Fittings: Flanges or steel pipe nipples with clamps to suit piping and equipment connections.

F. Muffler/Silencer:

1. Critical type, sized as recommended by engine manufacturer and selected with exhaust piping system to not exceed engine manufacturer's engine backpressure requirements.

a. Sound level measured at a distance of 23 ft. from exhaust discharge after installation is complete shall be 76 dBA or less.

G. Air-Intake Filter: Heavy-duty, engine-mounted air cleaner with replaceable dry-filter element and "blocked filter" indicator.

H. Starting System: 24V electric, with negative ground.

1. Components: Sized so they are not damaged during a full engine-cranking cycle with ambient temperature at maximum specified in "Performance Requirements" Article.
2. Cranking Motor: Heavy-duty unit that automatically engages and releases from engine flywheel without binding.
3. Cranking Cycle: As required by NFPA 110 for system level specified.
4. Battery: Lead acid, with capacity within ambient temperature range specified in "Performance Requirements" Article to provide specified cranking cycle at least three times without recharging.
5. Battery Cable: Size as recommended by engine manufacturer for cable length indicated. Include required interconnecting conductors and connection accessories.
6. Battery-Charging Alternator: Factory mounted on engine with solid-state voltage regulation and 35-A minimum continuous rating.
7. Battery Charger: Current-limiting, automatic-equalizing, and float-charging type designed for lead-acid batteries. Unit shall comply with UL 1236 and include the following features:

    a. Operation: Equalizing-charging rate of 10 A shall be initiated automatically after battery has lost charge until an adjustable equalizing voltage is achieved at battery terminals. Unit shall then be automatically switched to a lower float-charging mode and shall continue to operate in that mode until battery is discharged again.
    b. Automatic Temperature Compensation: Adjust float and equalize voltages for variations in ambient temperature from minus 40 to 140 deg to prevent overcharging at high temperatures and undercharging at low temperatures.
    c. Automatic Voltage Regulation: Maintain constant output voltage regardless of input voltage variations up to plus or minus 10 percent.
    d. Ammeter and Voltmeter: Flush mounted in door. Meters shall indicate charging rates.
    e. Safety Functions: Sense abnormally low battery voltage and close contacts providing low battery voltage indication on control and monitoring panel. Sense high battery voltage and loss of ac input or dc output of battery charger. Either condition shall close contacts that provide a battery-charger malfunction indication at system control and monitoring panel.
    f. Enclosure and Mounting: NEMA 250, Type 1, wall-mounted cabinet.

2.5 DIESEL FUEL-OIL SYSTEM

A. Comply with NFPA 37.

B. Piping: Fuel-oil piping shall be Schedule 40 black steel, complying with requirements in Section 231113 "Facility Fuel-Oil Piping." Cast iron, aluminum, copper, and galvanized steel shall not be used in the fuel-oil system.

C. Main Fuel Pump: Mounted on engine to provide primary fuel flow under starting and load conditions.

D. Fuel Filtering: Remove water and contaminants larger than 1 micron.

E. Relief-Bypass Valve: Automatically regulates pressure in fuel line and returns excess fuel to source.

F. Fuel-Oil Storage Tank: Comply with requirements in Consult tank manufacturers about capacities available for size of set in Project. See discussion of fuel tanks in the Evaluations.

G. Subbase-Mounted, Double-Wall, Fuel-Oil Tank: Factory installed and piped, complying with UL 142 fuel-oil tank. Features include the following:

1. Tank level indicator.
2. Fuel-Tank Capacity: 24hrs at 100% load
3. Leak detection in interstitial space.
4. Vandal-resistant fill cap.
5. Containment Provisions: Comply with requirements of authorities having jurisdiction.

2.6 CONTROL AND MONITORING

A. Automatic Starting System Sequence of Operation: When mode-selector switch on the control and monitoring panel is in the automatic position, remote-control contacts in one or more separate automatic transfer switches initiate starting and stopping of engine generator. When mode-selector switch is switched to the on position, engine generator starts. The off position of same switch initiates engine generator shutdown. When engine generator is running, specified system or equipment failures or derangements automatically shut down engine generator and initiate alarms.

B. Manual Starting System Sequence of Operation: Switching on-off switch on the generator control panel to the on position starts engine generator. The off position of same switch initiates engine generator shutdown. When engine generator is running, specified system or equipment failures or derangements automatically shut down engine generator and initiate alarms.

C. Provide minimum run time control set for 15 minutes with override only by operation of a remote emergency-stop switch.

D. Control panel must comply with UL 6200.

E. Connectivity: Native Ethernet, WiFi, and Bluetooth connectivity.

F. Web Browser Interface: All user interaction accomplished via standard web browser interface. Solutions requiring dedicated software for connectivity are not acceptable.

G. Remote Connectivity: User interface available both internally and externally to the user's network, based on network security preferences. All remote connectivity may be disabled at any time by the user.

H. Automated Notification: Controller capable of sending multiple automated email alerts without intermediate service provider.

I. Notification Customization: User configurable allowing any operational or fault condition to initiate notification to any personnel including (but not limited to) generator service provider.

J. Environmentally Hardened Design: Open circuit boards, edge cards, and PC ribbon cable connections are unacceptable.

K. Circuit boards with surface-mounted components to provide vibration durability. Circuit boards utilizing large capacitors or heat sinks must utilize encapsulation methods to securely support these components.

L. Configuration:

1. Operating and safety indications, protective devices, basic system controls, and engine gauges shall be grouped in a common control and monitoring panel mounted on the engine generator. Mounting method shall isolate the control panel from engine generator vibration. Panel powered from the engine generator battery.

M. Control and Monitoring Panel:

1. Digital engine generator controller with integrated touch screen, controls, and microprocessor, capable of local and remote control, monitoring, and programming, with battery backup.
2. Instruments: Located on the control and monitoring panel and viewable during operation.

    a. Engine lubricating-oil pressure gauge.
    b. Engine-coolant temperature gauge.
    c. DC voltmeter (alternator battery charging).
    d. Running-time meter.
    e. AC voltmeter, for each phase.
    f. AC ammeter, for each phase.
    g. AC frequency meter.
    h. Generator-voltage adjusting feature.

3. Controls and Protective Devices: Controls, shutdown devices, and common alarm indication, including the following:

    a. Cranking control equipment.
    b. Run-Off-Auto switch.
    c. Control switch not in automatic position alarm.
    d. Overcrank alarm.
    e. Overcrank shutdown device.
    f. Low-water temperature alarm.
    g. High engine temperature pre-alarm.
    h. High engine temperature.
    i. High engine temperature shutdown device.
    j. Overspeed alarm.
    k. Overspeed shutdown device.
    l. Low fuel main tank.

        1) Low-fuel-level alarm shall be initiated when the level falls below that required for operation for duration required

    m. Coolant low-level alarm.
    n. Coolant low-level shutdown device.
    o. Coolant high-temperature prealarm.
    p. Coolant high-temperature alarm.
    q. Coolant low-temperature alarm.
    r. Coolant high-temperature shutdown device.
    s. EPS load indicator.
    t. Battery high-voltage alarm.
    u. Low cranking voltage alarm.
    v. Battery-charger malfunction alarm.
    w. Battery low-voltage alarm.
    x. Lamp test.
    y. Contacts for local and remote common alarm.
    z. Remote manual stop shutdown device.
    aa. Generator overcurrent-protective-device not-closed alarm.
    bb. Hours of operation.
    cc. Engine generator metering, including voltage, current, hertz, kilowatt, kilovolt ampere, and power factor.

N. Connection to Datalink:

1. A separate terminal block, factory wired to Form C dry contacts, for each alarm and status indication.
2. Provide connections for datalink transmission of indications to remote data terminals via Modbus Data system connections to terminals are covered in Section 260913 "Electrical Power Monitoring and Control."

O. Common Remote Panel with Common Audible Alarm: Include necessary contacts and terminals in control and monitoring panel. Remote panel shall be powered from the engine generator battery.

P. Remote Alarm Annunciator: An LED indicator light labeled with proper alarm conditions shall identify each alarm event, and a common audible signal shall sound for each alarm condition. Silencing switch in face of panel shall silence signal without altering visual indication. Connect so that after an alarm is silenced, clearing of initiating condition will reactivate alarm until silencing switch is reset. Cabinet and faceplate are surface- or flush-mounting type to suit mounting conditions indicated.

1. Overcrank alarm.
2. Low water-temperature alarm.
3. High engine temperature pre-alarm.
4. High engine temperature alarm.
5. Low lube oil pressure alarm.
6. Overspeed alarm.
7. Low fuel main tank alarm.
8. Low coolant level alarm.
9. Low cranking voltage alarm.
10. Contacts for local and remote common alarm.
11. Audible-alarm silencing switch.
12. Air shutdown damper when used.
13. Run-Off-Auto switch.
14. Control switch not in automatic position alarm.
15. Fuel tank derangement alarm.
16. Fuel tank high-level shutdown of fuel supply alarm.
17. Lamp test.
18. Low-cranking voltage alarm.
19. Generator overcurrent-protective-device not-closed alarm.

Q. Remote Emergency-Stop Switch: Flush; wall mounted unless otherwise indicated; and labeled. Push button shall be protected from accidental operation.

2.7 GENERATOR OVERCURRENT AND FAULT PROTECTION

A. Overcurrent protective devices shall be coordinated to optimize selective tripping when a short circuit occurs.

1. Overcurrent protective devices for the entire EPSS shall be coordinated to optimize selective tripping when a short circuit occurs. Coordination of protective devices shall consider both utility and EPSS as the voltage source.

2. Overcurrent protective devices for the EPSS shall be accessible only to authorized personnel.

B. Generator Overcurrent Protective Device:

1. Insulated-case circuit breaker, electronic-trip type; 100 percent rated; complying with UL 489:

    a. Tripping Characteristics: Adjustable long-time and short-time delay and instantaneous.
    b. Trip Settings: Selected to coordinate with generator thermal damage curve.
    c. Shunt Trip: Connected to trip breaker when engine generator is shut down by other protective devices.
    d. Mounting: Adjacent to, or integrated with, control and monitoring panel.

C. Generator Protector: Microprocessor-based unit shall continuously monitor current level in each phase of generator output, integrate generator heating effect over time, and predict when thermal damage of alternator will occur. When signaled by generator protector or other engine generator protective devices, a shunt-trip device in the generator disconnect switch shall open the switch to disconnect the generator from load circuits. Protector performs the following functions:

1. Initiates a generator overload alarm when generator has operated at an overload equivalent to 110 percent of full-rated load for 60 seconds. Indication for this alarm is integrated with other engine generator malfunction alarms. Contacts shall be available for load shed functions.
2. Under single- or three-phase fault conditions, regulates generator to 300 percent of rated full-load current for up to 10 seconds.
3. As overcurrent heating effect on the generator approaches the thermal damage point of the unit, protector switches the excitation system off, opens the generator disconnect device, and shuts down the engine generator.
4. Senses clearing of a fault by other overcurrent devices and controls recovery of rated voltage to avoid overshoot.

D. Ground-Fault Indication: Comply with NFPA 70, "Emergency System" signals for ground fault.

1. Indicate ground fault with other engine generator alarm indications.
2. Trip generator protective device on ground fault.

E. Arc Energy Reduction: Comply with NFPA 70 for arc energy reduction for circuit breakers 1200A and greater.

1. Energy-reducing maintenance switch with local status indicator.
2. Instantaneous override that is less than the available arcing current.

2.8 GENERATOR, EXCITER, AND VOLTAGE REGULATOR

A. Comply with NEMA MG 1.

B. Drive: Generator shaft shall be directly connected to engine shaft. Exciter shall be rotated integrally with generator rotor.

C. Electrical Insulation: Class H.

D. Stator-Winding Leads: Brought out to terminal box to permit future reconnection for other voltages if required. Provide 12 lead alternator.

E. Construction shall prevent mechanical, electrical, and thermal damage due to vibration, overspeed up to 125 percent of rating, and heat during operation at 110 percent of rated capacity.

F. Enclosure: Dripproof.

G. Instrument Transformers: Mounted within generator enclosure.

H. Voltage Regulator: Solid-state type, separate from exciter, providing performance as specified and as required by NFPA 110.

1. Voltage Adjustment on Control and Monitoring Panel: Provide plus or minus 5 percent adjustment of output-voltage operating band.
2. Maintain voltage within 30 percent on one step, full load.
3. Provide anti-hunt provision to stabilize voltage.
4. Maintain frequency within 5 percent and stabilize at rated frequency within 5 seconds.

I. Strip Heater: Thermostatically controlled unit arranged to maintain stator windings above dew point.

J. Windings: Two-thirds pitch stator winding and fully linked amortisseur winding.

K. Subtransient Reactance: 15 percent maximum, based on the rating of the engine generator set.

2.9 OUTDOOR ENGINE GENERATOR ENCLOSURE

A. Generator packaged within sound attenuated enclosure.

B. Sound Insulation: Enclosure and air discharge hood completely lined with 3 inches of fiberglass and perforated aluminum.

C. Enclosure Construction: Minimum 14 gauge steet with hinged, removable doors to allow access to the engine, alternator, and control panel. Adjustable hinges for door alignment. Hinges and all exposed fasteners must be stainless steel. Pop-rivets weaken the paint system and are not allowed on external painted surfaces. Each door equipped with lockable hardware and identical keys.

D. Upward discharging enclosure ventilation exhaust hood.

E. Enclosure Finish: Electrostatic applied powered paint, baked and finished to manufacturer's specifications.

F. Enclosure Color: Manufacturers standard Color

G. Silencer mounted on top of enclosure.

H. Engine-Cooling Airflow through Enclosure: Maintain temperature rise of system components within required limits when unit operates at 110 percent of rated load for two hours with ambient temperature at top of range specified in system service conditions.

1. Louvers: Fixed-engine, cooling-air inlet and discharge. Stormproof and drainable louvers prevent entry of rain and snow.
2. Ventilation: Provide temperature-controlled exhaust fan interlocked to prevent operation when engine is running.

I. Interior Lights with Switch: Factory-wired, vapor-proof luminaires within housing; arranged to illuminate controls and accessible interior. Arrange for external electrical connection.

1. AC lighting system and connection point for operation when remote source is available.
2. DC lighting system for operation when remote source and generator are both unavailable.

J. Convenience Outlets: Factory-wired, GFCI. Arrange for external electrical connection.

2.10 VIBRATION ISOLATION DEVICES

A. Elastomeric Isolator Pads: Oil- and water-resistant elastomer or natural rubber, arranged in single or multiple layers, molded with a nonslip pattern and galvanized-steel baseplates of sufficient stiffness for uniform loading over pad area, and factory cut to sizes that match requirements of supported equipment.

1. Material: Standard neoprene separated by steel shims.
2. Shore A Scale Durometer Rating: 70
3. Number of Layers: 1

B. Restrained Spring Isolators: Freestanding, steel, open-spring isolators with seismic restraint.

1. Housing: Steel with resilient vertical-limit stops to prevent spring extension due to wind loads or if weight is removed; factory-drilled baseplate bonded to 1/4-inch thick, elastomeric isolator pad attached to baseplate underside; and adjustable equipment-mounting and -leveling bolt that acts as blocking during installation.
2. Outside Spring Diameter: Not less than 80 percent of compressed height of the spring at rated load.
3. Minimum Additional Travel: 50 percent of required deflection at rated load.
4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
6. Minimum Deflection: 1 Inch

C. Vibration isolation devices shall not be used to accommodate misalignments or to make bends.

2.11 FINISHES

A. Indoor and Outdoor Enclosures and Components: Manufacturer's standard finish over corrosion-resistant pretreatment and compatible primer.

B. Powder coated paint surfaces:

1. Minimum Paint Thickness: 2.5 mil in accordance with ASTM D 1186-87.
2. Material Hardness: ASTM D3363-92a.
3. Resistance to Cracking: ASTM D522-B.
4. Paint Adhesion: ASTM D3359-B.
5. Resistance to Salt Water Corrosion: ASTM B117, ASTM D1654.
6. Resistance to Humidity: ASTM D1735, ASTM D1654.
7. Impact Resistance: ASTM 2784.
8. UV Protection: SAE J1690.

2.12 SOURCE QUALITY CONTROL

A. Prototype Testing: Factory test engine generator using same engine model, constructed of identical or equivalent components and equipped with identical or equivalent accessories.

1. Tests: Comply with IEEE 115 and with NFPA 110.

B. Project-Specific Equipment Tests: Before shipment, factory test engine generator and other system components and accessories manufactured specifically for this Project. Perform tests at rated load and power factor. Include the following tests:

1. Test components and accessories furnished with installed unit that are not identical to those on tested prototype to demonstrate compatibility and reliability.
2. Test generator, exciter, and voltage regulator as a unit.
3. Full load run.
4. Maximum power.
5. Voltage regulation.
6. Transient and steady-state governing.
7. Single-step load pickup.
8. Safety shutdown.
9. Provide 14 days' advance notice of tests and opportunity for observation of tests by Owner's representative.
10. Report factory test results within 10 days of completion of test.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas, equipment bases, and conditions, with Installer present, for compliance with requirements for installation and other conditions affecting packaged engine generator performance.

B. Examine roughing-in for piping systems and electrical connections. Verify actual locations of connections before packaged engine generator installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electrical service in accordance with requirements indicated:

1. Notify Construction Manager no fewer than 2 working days in advance of proposed interruption of electrical service.

3.3 INSTALLATION

A. Comply with NECA 1 and NECA 404.

B. Comply with packaged engine generator manufacturers' written installation and alignment instructions and with NFPA 110

C. Equipment Mounting:

1. Install packaged engine generators on cast-in-place concrete equipment bases. Comply with requirements for equipment bases and foundations specified in Section 033000 "Cast-in-Place Concrete."
2. Coordinate size and location of concrete bases for packaged engine generators. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified with concrete.

D. Install packaged engine generator to provide access, without removing connections or accessories, for periodic maintenance.

3.4 IDENTIFICATION

A. Install a sign indicating the generator neutral is bonded to the main service neutral at the main service location.

3.5 FIELD QUALITY CONTROL

A. Testing Agency:

1. Owner will engage a qualified testing agency to perform tests and inspections.
2. Engage a qualified testing agency to perform tests and inspections.
3. Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.
4. Perform tests and inspections with the assistance of a factory-authorized service representative.

B. Tests and Inspections:

1. Perform tests recommended by manufacturer and each visual and mechanical inspection and electrical and mechanical test listed in first two subparagraphs below, as specified in NETA ATS. Certify compliance with test parameters.

a. Visual and Mechanical Inspection:

1) Compare equipment nameplate data with Drawings and the Specifications.
2) Inspect physical and mechanical condition.
3) Inspect anchorage, alignment, and grounding.
4) Verify that the unit is clean.

b. Electrical and Mechanical Tests:

1) Test protective relay devices.
2) Verify phase rotation, phasing, and synchronized operation as required by the application.
3) Functionally test engine shutdown for low oil pressure, overtemperature, overspeed, and other protection features as applicable.
4) Perform vibration test for each main bearing cap.

5) Verify correct functioning of the governor and regulator.

2. NFPA 110 Acceptance Tests: Perform tests required by NFPA 110 that are additional to those specified here, including, but not limited to, single-step full-load pickup test.
3. Battery Tests: Equalize charging of battery cells in accordance with manufacturer's written instructions. Record individual cell voltages.

    a. Measure charging voltage and voltages between available battery terminals for full-charging and float-charging conditions. Check electrolyte level and specific gravity under both conditions.
    b. Test for contact integrity of all connectors. Perform an integrity load test and a capacity load test for the battery.
    c. Verify acceptance of charge for each element of the battery after discharge.
    d. Verify that measurements are within manufacturer's specifications.

4. Battery-Charger Tests: Verify specified rates of charge for both equalizing and float-charging conditions.
5. System Integrity Tests: Methodically verify proper installation, connection, and integrity of each element of engine generator system before and during system operation. Check for air, exhaust, and fluid leaks.
6. Exhaust-System Back-Pressure Test (non-enclosed units): Use a manometer with a scale exceeding 40-inch wg. Connect to exhaust line close to engine exhaust manifold. Verify that back pressure at full-rated load is within manufacturer's written allowable limits for the engine.
7. Exhaust Emissions Test: Comply with applicable government test criteria.
8. Voltage and Frequency Transient Stability Tests: Use recording oscilloscope to measure voltage and frequency transients for 50 and 100 percent step-load increases and decreases, and verify that performance is as specified.
9. Harmonic-Content Tests: Measure harmonic content of output voltage at 25 and 100 percent of rated linear load. Verify that harmonic content is within specified limits.

C. Coordinate tests with tests for transfer switches and run them concurrently.

D. Test instruments shall have been calibrated within the past 12 months, traceable to NIST Calibration Services, and adequate for making positive observation of test results. Make calibration records available for examination on request.

E. Leak Test: After installation, charge exhaust, coolant, and fuel systems and test for leaks. Repair leaks and retest until no leaks exist.

F. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation for generator and associated equipment.

G. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

H. Remove and replace malfunctioning units and retest as specified above.

I. Retest: Correct deficiencies identified by tests and observations, and retest until specified requirements are met.

J. Report results of tests and inspections in writing. Record adjustable relay settings and measured insulation resistances, time delays, and other values and observations. Attach a label or tag to each tested component indicating satisfactory completion of tests.

3.6 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, maintenance service shall include 12 months' full maintenance by skilled employees of manufacturer's authorized service representative. Include quarterly preventive maintenance and exercising to check for proper starting, load transfer, and running under load. Include routine preventive maintenance as recommended by manufacturer and adjusting as required for proper operation. Parts shall be manufacturer's authorized replacement parts and supplies.

3.7 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain packaged engine generators.

END OF SECTION

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PART 1 GENERAL

1.01 Scope

Furnish and install automatic transfer switch(es) with number of poles, amperage, voltage, and withstand current ratings as shown on the plans. Basis of design is a Generac TX Transfer Switch Non Service Entrance Rated Delayed/Programmed Transition, 600A , 3 Pole 4 Wire 208V , Transfer Switch in a Nema 1 Enclosure. Each automatic transfer shall consist of a mechanically held power transfer switch unit and a microprocessor controller, interconnected to provide complete automatic operation. All transfer switches and control panels shall be the product of the same manufacturer.

1.02 Acceptable Manufacturers

Automatic transfer switches shall be Generac TX Series. Any alternate shall be submitted to the consulting engineer in writing at least 10 days prior to bid. Each alternate bid must list any deviations from this specification.

1.03 Codes and Standards

The automatic transfer switches and accessories shall conform to the requirements of:

A. UL 1008 - Standard for Automatic Transfer Switches
B. NFPA 70 - National Electrical Code (2017 version and later for start circuit monitoring)
C. NEC Articles 700, 701, 702, 708
D. NFPA 99 – Health Care Facilities
E. NFPA 110 – Emergency and Standby Power Systems
F. IEEE Standard 446 – IEEE Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Applications
G. NEMA Standards ICS10, MG1, MG250, ICS6, AB1
H. ANSI C62.41
I. International Standards Organization: ISO 8528, 9001.
J. Where seismic rating and/or certification is required: IBC 2018, OSHPD

PART 2 PRODUCTS

2.01 Mechanically Held Transfer Switch

A. The basis of design is the Generac TX Series Transfer switch that utilities a knife blade mechanically latching design with maintenance free contacts. The transfer switch unit shall be an electrically operated and mechanically held. The open transition switch shall be mechanically interlocked to ensure only one of two possible positions, normal or emergency. The delayed transition switch shall be mechanically interlocked to ensure one of three possible position, normal and emergency.

B. The switch shall be positively locked and unaffected by momentary outages so that contact pressure is maintained at a constant value and temperature rise at the contacts is minimized for maximum reliability and operating life.

C. All main contacts shall be silver composition. Switches shall have segmented blow-on construction for high withstand current capability and be protected by separate arcing contacts.

D. A manual operating handle shall be provided for maintenance purposes.

E. Designs utilizing components of or parts thereof which are not intended for continuous duty, repetitive switching or transfer between two active power sources are not acceptable.

F. Where neutral conductors must be switched, the ATS shall be provided with fully rated neutral transfer contacts.

G. Where neutral conductors are to be solidly connected, a neutral terminal plate with fully rated AL-CU pressure connectors shall be provided.

H. The switch shall be capable of the following methods of transfer: Open with In-Phase transition only, Time Delay in Neutral transition, or In-Phase transition with a default to Time Delay in Neutral.

2.02 ATS Control with Integrated User Interface Panel

A. The basis of design is the Generac TXC-100 Controller with Integrated User Interface Panel which is voltage agnostic for service purposes removing the need for technicians to carry and support control panels for every available voltage. Any manufacturers that provide a controller or control panel that does not meet this requirement should notify the consulting engineer before bidding.

B. The controller shall be connected to the transfer switch by an interconnecting wiring harness. The harness shall include a keyed disconnect plug to enable the controller to be disconnected from the transfer switch for routine maintenance.

C. The controller shall direct the operation of the transfer switch. The controller's sensing and logic shall be controlled by a built-in microprocessor for maximum reliability, minimum maintenance, and include standard on-board serial communications capability.

D. A user accessible USB port shall be provided to facilitate firmware updates, uploading of switch operational parameters, downloading of event history and switch operational statistics. This USB port shall be front accessible without opening the ATS door.

E. The controller shall provide single and three phase capability for maximum application flexibility and minimal spare part requirements. Voltage sensing shall be true RMS type and shall be accurate to ± 1% of nominal voltage. Frequency sensing shall be accurate to ± 0.1Hz. Time delay settings shall be accurate to ±0.5% of the full-scale value of the time delay. The panel shall be capable of operating over a temperature range of -20 to + 70 degrees C.

F. The controller power supply shall be field-configurable to operate on 120V through 480V systems without the need for transformers.

G. Control logic shall be backed up with a rechargeable, user-replaceable lithium-ion battery that shall also maintain control power for up to 60 minutes in the event no source power is available.

H. The controller shall be enclosed with a protective cover and be mounted separate from the transfer switch unit for safety and ease of maintenance.

I. The controller shall meet or exceed the requirements for Electromagnetic Compatibility (EMC) as follows:

1. IEC 61000 – 4 – 3 Radiated RF Field Immunity
2. IEC 61000 – 4 – 4 Electrical Fast Transient/Burst Immunity
3. IEC 61000 – 4 – 5 Surge Immunity
4. IEC 61000 – 4 – 6 Conducted RF Immunity
5. IEC 61000 – 4 -11 Voltage Dips and Interruptions
6. EN 61000 – 6 - 2 Industrial Immunity Requirements EN 61000-6-4 - Radiated Emissions
7. EN 61000 – 6 - 4 Conducted Emissions
8. CISPR 11 – Conducted RF Emissions and Radiated RF Emissions

2.03 Enclosure

The basis of design is a Generac TX Series Transfer Switch in a Nema 1 Enclosure, with dimensions no larger than Not SE Rated Inches in Height , 63.19 Inches in Width, and 28.22 Inches In Depth. Larger enclosures than the basis of design will need to be approved by the Consulting Engineer to ensure there is enough wall space and appropriate clearance.

A. Provide a temperature and humidity controlled anti-condensation heater for all NEMA 3R and 4X enclosed units. Heater shall be an available option on NEMA 1 enclosures, when called for on plans. Heater cover to indicate a hot surface.

B. The switch mechanism and controller shall be easily removable from the enclosure in the field. This requirement will facilitate easy single-person installation on wall mounted switches, conduit fitting, and cable pulling while minimizing risk of damage and/or contamination of ATS components during the install process.

C. Controller human interface and USB port shall be visible and operational through the enclosure door, without the need for personal protective equipment, avoiding arc-flash hazard for routine checks of the controller status.

PART 3 OPERATIONS

3.01 Controller Display and Keypad

A. A backlit four-line graphical LCD display and human interface shall be an integral part of the controller for viewing all available data and setting desired operational parameters. Operational parameters shall also be available for viewing and limited control through the RS-485 communications port.

B. All instructions and controller settings shall be easily accessible, readable and accomplished without the use of codes, calculations, or instruction manuals.

C. The user interface shall be provided with test/reset modes. The test mode will simulate a normal source failure. The reset mode shall bypass the time delays on either transfer to emergency or retransfer to normal.

D. The following parameters shall only be adjustable only by authorized service personnel:

1. Nominal line voltage and frequency
2. Single or three phase sensing on normal
3. Transfer operating mode configuration, (open transition, or delayed transition)

3.02 Voltage and Frequency Sensing

A. Voltage and frequency on both the normal and emergency sources (as noted below) shall be continuously monitored, with the following pickup, dropout, and trip settings capabilities; values shown as percentage of nominal unless otherwise specified.

Voltage and Frequency Settings	Range	Default Value
Source 1 (Normal) is Genset	Yes or No	No
Source 1 Undervoltage Dropout	50-97%	85%
Source 1 Undervoltage Pickup	52-99%	90%
Source 1 Overvoltage Dropout	105-120%	110%

Source 1 Overvoltage Pickup	103-118%	105%
Source 1 Underfrequency Dropout	90-97%	90%
Source 1 Underfrequency Pickup	91-99%	95%
Source 1 Overfrequency Dropout	103-110%	105%
Source 1 Overfrequency Pickup	101-109%	102%
Source 1 Voltage Imbalance Drop	5-20%	5%
Source 1 Voltage Imbalance Pickup	3-18%	3%
Source 1 Warmup Time	0-1800s	3s
Source 1 Cooldown Time	0-1800s	1800s
Source 1 Minimum Run Time	300-1800s	1200s
Source 2 is Generator	Yes or No	Yes
Source 2 Undervoltage Dropout	50-97%	85%
Source 2 Undervoltage Pickup	52-99%	90%
Source 2 Overvoltage Dropout	105-120%	110%
Source 2 Overvoltage Pickup	103-118%	105%
Source 2 Underfrequency Dropout	90-97%	90%
Source 2 Underfrequency Pickup	91-99%	99%
Source 2 Overfrequency Dropout	103-110%	105%
Source 2 Overfrequency Pickup	101-109%	102%
Source 2 Voltage Imbalance Drop	5-20%	5%
Source 2 Voltage Imbalance Pickup	3-18%	3%
Source 2 Minimum Run Time	300-1800s	1200s
Source 2 Warmup Time	0-1800s	3s
Source 2 Cooldown Time	0-1800s	1800s
Phase Rotation Check	ABC, CBA, OFF	ABC
Supply Overvoltage	350 VAC	Fixed
Manual Return to Normal	Yes or No	
Time Delay Settings		

Transfer to Emergency	120s max	30s
Re-transfer to Normal	1,800s max	1,800s
Time Delay Neutral	120s max	30s
Engine Cool Down	300-1,800s	1,800s
Delayed Transition Time	120s max	120s
Elevator Signal	120s max	30s
In Phase Transfer	Yes or No	
In Phase Synchronization	Time 60-3600s	300s
Preferred Source	S1, S2	S1
Voltage Imbalance Enable	Yes or No	
Voltage Imbalance Timeout	10-30s max	20s

B. Repetitive accuracy of all settings shall be within 1% at +25C

C. Voltage and frequency settings shall be field adjustable in 1% increments either locally with the display and keypad or remotely via RS-485 communications port access.

D. Source status screens shall be provided for both normal & emergency to provide digital readout of voltage and frequency.

E. The backlit graphical display shall have multiple language capability. Languages can be selected from the user interface.

3.03 Time Delays

A. A Line Interrupt delay shall be provided to override momentary normal source outages, delay all transfer and engine starting signals; adjustable 0 to 120 seconds. It shall be possible to bypass the time delay from the controller user interface.

B. An Engine Warm Up delay shall be provided for extended engine RPM stabilization where fast transfer to the emergency source is not required; adjustable 0 to 1,800 seconds. It shall be possible to bypass the time delay from the controller user interface.

C. A Transfer to Emergency delay shall be provided for controlled sequencing of loads to the emergency source; adjustable from 0 to 120 seconds. It shall be possible to bypass the time delay from the controller user interface.

D. A Retransfer to Normal delay shall be provided to ensure stability of the normal source, adjustable from 0 to 1,800 seconds. Time delay shall be automatically bypassed if the emergency source fails and normal source is acceptable.

E. An Engine Minimum Runtime delay shall be provided to reduce nuisance starts when the normal source power is unstable but does not trigger a transfer to the emergency source, adjustable from 5 to 30 minutes. Operates in conjunction with Engine Cool Down delay.

F. An Engine Cool Down delay shall be provided; adjustable 300 – 1,800 seconds.

G. An Elevator Signal Before Transfer output signal shall be provided to drive an external relay for selective load disconnect control. The controller shall have the ability to activate an adjustable 0 to 120 second delay in any of the following modes:

1. Prior to transfer only.
2. Prior to and after transfer.
3. Normal to emergency only.
4. Emergency to normal only.
5. Normal to emergency and emergency to normal.
6. All transfer conditions or only when both sources are available.

H. For special applications (i.e. three-sources), the option to select the Preferred Source.

I. All adjustable time delays shall be field adjustable without the use of special tools or software.

Time Delay Summary Table:

Time Delay Description	Range	Default Value
Line Interrupt Delay	0 – 120 sec.	3 sec.
Engine Warm Up Delay	0 – 1,800 sec.	3 sec.
Transfer to Emergency	0 – 120 sec.	3 sec.
Retransfer to Normal	0 – 1,800 sec.	1,800 sec.
Engine Minimum Run Time	5 – 30 min.	5 min.
Engine Cool Down	300 – 1,800 sec.	1,800 sec.
Delayed Transition (Center Off Position)	0 – 120 sec.	120 sec.
Elevator Signal Before Transfer	0 – 120 sec.	0 sec.
Preferred Source	Normal (S1), Emerg. (S2)	Normal (S1)

3.04 External Control Interfaces and Indicators

A. Communications connectors, user interface and display shall be accessible and usable without presenting an arc-flash hazard.
B. Customer inputs shall be optically isolated for wider compatibility with external systems. This will protect the controller from external surges and transient voltages.
C. Surge Protection for the ATS controls shall be provided.
D. Replaceable fuses to protect the power supply to the ATS control panel.
E. A set of contacts rated 5 amps, 30 VDC shall be provided for a low-voltage engine start signal. The start signal shall prevent dry cranking of the engine by requiring the generator set to reach proper output and run for the duration of the Engine Minimum Runtime setting, regardless of whether the normal source restores before the load is transferred.
F. Engine starting contacts shall facilitate start-circuit monitoring to comply with the 2017 and later versions of NFPA 70 Article 700.10 (D)(3).
G. Two sets of Form-C auxiliary contacts, rated 10 amps, 250 VAC shall be provided to indicate the switch actuator position, including center-off for Time Delay Neutral switches or a Permissive (Emergency Inhibit) condition.
H. A single General Alarm (summary alarm) indication shall light up the alert indicator and de-energize the configured common alarm output relay for external monitoring.
I. LED indicating lights shall be provided; one to indicate when the ATS is connected to the normal source and one to indicate when the ATS is connected to the emergency source.
J. LED indicating lights shall be provided and energized by controller outputs. The lights shall provide true source availability of the normal and emergency source, as determined by the voltage sensing trip and reset settings for each source.
K. LED indicating light shall be provided to indicate switch not in automatic mode (manual).
L. LED indicating light shall be provided to indicate any alarm condition.
M. The controller shall have two programmable inputs and one programmable output as standard; with an optional expansion board to add up to four programmable input/outputs. Programmable I/O conditions shall include:

Programmable Output	Programmable Input
Source 1 – Two Wire Start	Permissive (Emergency Inhibit)
Source 2 – Two Wire Start	Remote Engine Fast Test
Engine Exercising	Remote Engine Normal Test
Engine Warmup	ATS Timer
Signal Before Transfer	Initiate Demand Response
General Alarm	
Source 1 Good	
Source 2 Good	

N. System Status - The controller LCD display shall include a System Status screen which shall be accessible from any point in the menu system by depressing the “ESC” key until you arrive at the System Status screen. This screen shall display a clear description of the active operating sequences and switch position. Operational status information displayed shall include:

1. Source 1 status (good or bad)
2. Source 2 status (good or bad)
3. Any active timer
4. Permissive (Emergency Inhibit when active)

3.05 Transfer and Exercise Controls

The following standard features shall be built into the controller, capable of being activated through keypad programming as required by the user:

A. Provide the ability to select “commit/no commit to transfer” to determine whether the load should be transferred to the emergency generator if the normal source restores before the generator is ready to accept the load.
B. An engine generator exercising timer shall be provided to configure daily, day of week, weekly, bi-weekly, or monthly testing of an engine generator set at a specified time of day with or without load for a programmable period of time (Engine Minimum Runtime).
C. Terminals shall be provided for a remote contact to signal the ATS to transfer to emergency for remote test. Test signal can be enabled through the keypad or digital input. Transfer to emergency for demand response can be enabled by a digital input.
D. For In-Phase Transfer Switch Designs: An in-phase monitor shall be provided in the controller such that the transfer occurs with less than ten degrees phase angle difference between sources. The monitor shall control transfer so that motor load inrush currents do not exceed normal starting currents and shall not require external control of power sources. In-phase switch transfer time shall not exceed 25ms.

PART 4 ADDITIONAL FEATURES AND ACCESSORIES

4.01 Additional Optional Features

A. Expanded Input/Output Module. Expandable Input/Output Board Module Includes: 4 Relay Outputs and 4 Optically Isolated Inputs

PART 5 ADDITIONAL REQUIREMENTS

5.01 Withstand and Closing Ratings

A. The ATS shall be rated to close on and withstand the available RMS symmetrical short circuit current at the ATS terminals with the type of overcurrent protection shown on the plans. The basis of design for this project is a Generac

TX Series Automatic Transfer Switch with a 50ka 3 Cycle Rating, 50ka (.05 seconds) Time Based Rating, and a 85ka Specific Breaker Rating Transfer switches from other manufacturers with ratings less than provided in this section will need to be

B. Provide a temperature and humidity controlled anti-condensation heater for all NEMA 3R and 4X enclosed units. Heater shall be an available option on NEMA 1 enclosures, when called for on plans. Heater cover to indicate a hot surface.

C. The switch mechanism and controller shall be easily removable from the enclosure in the field. This requirement will facilitate easy single-person installation on wall mounted switches, conduit fitting, and cable pulling while minimizing risk of damage and/or contamination of ATS components during the install process.

D. Controller human interface and USB port shall be visible and operational through the enclosure door, without the need for personal protective equipment, avoiding arc-flash hazard for routine checks of the controller status.

5.02 Tests and Certification

A. The complete ATS shall be factory tested to ensure proper operation of the individual components and correct overall sequence of operation and to ensure that the operating transfer time, voltage, frequency and time delay settings are in compliance with the specification requirements.

B. The ATS manufacturer shall be certified to ISO 9001: 2015 International Quality Standard and the manufacturer shall have third party certification verifying quality assurance in design/development, production, installation and servicing in accordance with ISO 9001: 2015.

5.03 Service Representation

A. The ATS manufacturer shall support a service organization of company-employed personnel located throughout the contiguous United States. The service center's personnel must be factory trained and must be on call 24 hours a day, 365 days a year.

B. The manufacturer shall maintain records of switch shipments, by serial number, for a minimum of 10 years.

5.04 Warranty

A. The basis of design is a Generac TX Series Automatic Transfer Switch with a Comprehensive 5 Year Warranty.

B. A Basic Warranty is defined as the manufacturer covering replacement parts for the listed amount of the warranty period.

C. The Comprehensive Warranty is defined as the manufacturer covering replacement parts, labor, and limited technician travel costs for covered warranty repairs during the listed warranty period.

D. The switch mechanism and controller shall be easily removable from the enclosure in the field. This requirement will facilitate easy single-person installation on wall mounted switches, conduit fitting, and cable pulling while minimizing risk of damage and/or contamination of ATS components during the install process.

E. Controller human interface and USB port shall be visible and operational through the enclosure door, without the need for personal protective equipment, avoiding arc-flash hazard for routine checks of the controller status.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Interior lighting fixtures, lamps.
2. Emergency lighting units.
3. Exit signs.
4. Lighting fixture supports.

B. Related Sections:

1. Division 26 Section "Lighting Control Devices" for automatic control of lighting, including time switches, photoelectric relays, occupancy sensors, and multipole lighting relays and contactors.

1.2 SUBMITTALS

A. Product Data: For each type of lighting fixture, arranged in order of fixture designation. Include data on features, accessories, and finishes.

B. Shop Drawings: Show details of nonstandard or custom lighting fixtures. Indicate dimensions, weights, methods of field assembly, components, features, and accessories. Product Certificates: For each type of ballast for bi-level and dimmer-controlled fixtures, from manufacturer.

C. Field quality-control reports.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, product(s) indicated on Drawings. Substitutions shall be submitted to Engineer minimum (10) days prior to bid date for evaluation.

2.2 LIGHTING FIXTURE SUPPORT COMPONENTS

A. Comply with Division 26 Section "Hangers and Supports for Electrical Systems" for channel- and angle-iron supports and nonmetallic channel and angle supports.

B. Single-Stem Hangers: 1/2-inch steel tubing with swivel ball fittings and ceiling canopy. Finish same as fixture.

C. Twin-Stem Hangers: Two, 1/2-inch steel tubes with single canopy designed to mount a single fixture. Finish same as fixture.

D. Wires: ASTM A 641/A 641M, Class 3, soft temper, zinc-coated steel, 12 gage.

E. Wires for Humid Spaces: ASTM A 580/A 580M, Composition 302 or 304, annealed stainless steel, 12 gage.

F. Rod Hangers: 3/16-inch minimum diameter, cadmium-plated, threaded steel rod.

G. Hook Hangers: Integrated assembly matched to fixture and line voltage and equipped with threaded attachment, cord, and locking-type plug.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Lighting fixtures: Set level, plumb, and square with ceilings and walls. Install lamps in each fixture. Comply with all Seismic requirements.

B. Comply with NFPA 70 for minimum fixture supports.

C. Suspended Lighting Fixture Support:

1. Pendants and Rods: Where longer than 48 inches brace to limit swinging.
2. Stem-Mounted, Single-Unit Fixtures: Suspend with twin-stem hangers.
3. Continuous Rows: Use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of fixture chassis, including one at each end.

D. Adjust aimable lighting fixtures to provide required light intensities.

E. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

3.2 FIELD QUALITY CONTROL

A. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery and retransfer to normal.

B. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

END OF SECTION 265100

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PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Exterior luminaires with lamps.

1.2 SUBMITTALS

A. Product Data: For each luminaire, pole, and support component, arranged in order of lighting unit designation. Include data on features, accessories, and finishes.

B. Shop Drawings: Anchor-bolt templates keyed to specific poles and certified by manufacturer.

1.3 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with IEEE C2, "National Electrical Safety Code."

C. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, product(s) indicated on Drawings. Substitutions shall be submitted to Engineer minimum (10) days prior to bid date for evaluation.

PART 3 - EXECUTION

3.1 LUMINAIRE INSTALLATION

A. Install lamps in each luminaire.

B. Fasten luminaire to indicated structural supports. Comply with all Seismic Requirements.

1. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.

C. Adjust luminaires that require field adjustment or aiming.

3.2 CORROSION PREVENTION

A. Aluminum: Do not use in contact with earth or concrete. When in direct contact with a dissimilar metal, protect aluminum by insulating fittings or treatment.

B. Steel Conduits: Comply with Division 26 Section "Raceway and Boxes for Electrical Systems." In concrete foundations, wrap conduit with 0.010-inch-thick, pipe-wrapping plastic tape applied with a 50 percent overlap.

3.3 GROUNDING

A. Ground metal poles and support structures according to Division 26 Section "Grounding and Bonding for Electrical Systems."

1. Install grounding electrode for each pole unless otherwise indicated.
2. Install grounding conductor pigtail in the base for connecting luminaire to grounding system.

B. Ground nonmetallic poles and support structures according to Division 26 Section "Grounding and Bonding for Electrical Systems."

1. Install grounding electrode for each pole.
2. Install grounding conductor and conductor protector.
3. Ground metallic components of pole accessories and foundations.

END OF SECTION 265600

PART 1 GENERAL

1.01 DESCRIPTION

A. This section specifies the finishing, installation, connection, testing of Physical Access Control System, hereinafter referred to as the PACS.

1.02 RELATED WORK

A. All Sections listed in the Table of Contents are a Condition of this Section.

1.03 QUALITY ASSURANCE

A. The Contractor shall be responsible for providing, installing, and the operation of the PACS as shown. The Contractor shall also provide certification as required.

B. The security system will be installed and tested to ensure all components are fully compatible as a system and can be integrated with all associated security subsystems, whether the security system is stand-alone or a part of a complete Information Technology (IT) computer network.

C. Contractor Qualifications:

1. The Contractor or security sub-contractor shall be a licensed security Contractor with a minimum of five (5) years experience installing and servicing systems of similar scope and complexity.

1.04 SUBMITTALS

A. Shop drawing and as-built packages shall include:

1. Specification and scope of work pages for all individual security systems applicable to the design package that will:

a. Outline all general and job specific work required within the design package.

b. Provide a detailed device identification table outlining device Identification (ID) and use for all security systems equipment utilized in the design package.

2. Drawing sheets that will be plotted on the individual floor plans or site plans shall:

a. Include a title block as defined above.

b. Clearly define the drawings scale in both standard and metric measurements.

c. Provide device identification and location.

d. Address all signal and power conduit runs and sizes that are associated with the design of the electronic security system and other security elements (e.g., barriers, etc.).

e. Identify all pull box and conduit locations, sizes, and fill capacities.

B. Complete a full review process conducted by the Contractor along with the Owner's representative to ensure all work has been clearly defined and completed. All reviews shall be conducted in accordance with the project schedule.

C. Provide manufacturer security system product cut-sheets. Submit for approval at least 30 days prior to commencement of formal testing, a Security System Operational Test Plan. Include procedures for operational testing of each component and security subsystem, to include performance of an integrated system test.

D. Submit manufacture's certification of Underwriters Laboratories, Inc. (UL) listing as specified. Provide all maintenance and operating manuals per Section 01 00 00, GENERAL REQUIREMENTS.

E. General: Submittals shall be in full compliance of the Contract Documents. All submittals shall be provided in accordance with this section. Submittals lacking the breath or depth these requirements will be considered incomplete and rejected. Submissions are considered multidisciplinary and shall require coordination with applicable divisions to provide a complete and comprehensive submission package. Additional general provisions are as follows:

1. The Contractor shall schedule submittals in order to maintain the project schedule. For coordination drawings refer to Specification Section 01 33 10 - DESIGN SUBMITTAL PROCEDURES, which outline basic submittal requirements and coordination. Section 01 33 10 shall be used in conjunction with this section.

2. The Contractor shall identify variations from requirements of Contract Documents and state product and system limitations, which may be detrimental to successful performance of the completed work or system.

3. Each package shall be submitted at one (1) time for each review and include components from applicable disciplines (e.g., electrical work, architectural finishes, door hardware, etc.) which are required to produce an accurate and detailed depiction of the project.

4. Manufacturer's information used for submittal shall have pages with items for approval tagged, items on pages shall be identified, and capacities and performance parameters for review shall be clearly marked through use of an arrow or highlighting. Provide space for Resident Engineer and Contractor review stamps.

5. Technical Data Drawings shall be in the latest version of AutoCAD®, drawn accurately, and in accordance with CAD Standards. FREEHAND SKETCHES OR COPIED VERSIONS OF THE CONSTRUCTION DOCUMENTS WILL NOT BE ACCEPTED. The Contractor shall not reproduce Contract Documents or copy standard information as the basis of the Technical Data Drawings. If departures from the technical data drawings are subsequently deemed necessary by the Contractor, details of such departures and the reasons thereof shall be submitted in writing to the Resident Engineer for approval before the initiation of work.

6. Packaging: The Contractor shall organize the submissions according to the following packaging requirements:

a. Manual Content: In each manual include information specified in the individual Specification section, and the following information for each major component of building equipment and controls:

1) General system or equipment description.

2) Design factors and assumptions.

3) Copies of applicable Shop Drawings and Product Data.

4) System or equipment identification including: manufacturer, model and serial numbers of each component, operating instructions, emergency instructions, wiring diagrams, inspection and test procedures, maintenance procedures and schedules, precautions against improper use and maintenance, repair instructions, sources of required maintenance materials and related services, and a manual index.

b. Manufacturer's Data: Where manufacturer's standard printed data is included in the manuals, include only those sheets that are pertinent to the part or product installed. Mark each sheet to identify each part or product included in the installation. Where more than one (1) item in tabular format is included, identify each item, using appropriate references from the Contract Documents. Identify data that is applicable to the installation and delete references to information which is not applicable.

c. Where manufacturer's standard printed data is not available and the information is necessary for proper operation and maintenance of equipment or systems, or it is necessary to provide additional information to supplement the data included in the manual, prepare written text to provide the necessary information. Organize the text in a consistent format under a separate heading for different procedures. Where necessary, provide a logical sequence of instruction for each operating or maintenance procedure. Where similar or more than one product is listed on the submittal the Contractor shall differentiate by highlighting the specific product to be utilized.

F. Operations and Maintenance Manuals: Final copies of the manuals shall be delivered to the Resident Engineer as part of the acceptance test. The draft copy used during site testing shall be updated with any changes required prior to final delivery of the manuals. Each manual's contents shall be identified on the cover. The manual shall include names, addresses, and telephone numbers of each sub-contractor installing equipment or systems, as well as the nearest service representatives for each item of equipment for each system. The manuals shall include a table of contents and tab sheets. Tab sheets shall be placed at the beginning of each chapter or section and at the beginning of each appendix. The final copies delivered after completion of the endurance test shall include all modifications made during installation, checkout, and acceptance. Six (6) hard-copies and one (1) soft copy on CD of each item listed below shall be delivered as a part of final systems acceptance.

1.05 APPLICABLE PUBLICATIONS

A. The publications listed below (including amendments, addenda, revisions, supplement, and errata) form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. American National Standards Institute (ANSI)/ Security Industry Association (SIA):

AC-03 .....Access Control: Access Control Guideline Dye Sublimation Printing Practices for PVC Access Control Cards

C. National Fire Protection Association (NFPA):

70-14 ..... National Electrical Code

1.06 COORDINATION

A. Coordinate arrangement, mounting, and support of electronic safety and security equipment.

PART 2 PRODUCTS

2.01 GENERAL

A. All equipment and materials for the system will be compatible to ensure correct operation as outlined in FIPS 201, March 2006 and HSPD-12.

B. The security system characteristics listed in this section will serve as a guide in selection of equipment and materials for the PACS. If updated or more suitable versions are available then the Contracting Officer will approve the acceptance of prior to an installation.

C. PACS equipment shall meet or exceed all requirements listed below.

2.02 SURGE AND TAMPER PROTECTION

A. Surge Protection: Protect components from voltage surges originating external to equipment housing and entering through power, communication, signal, control, or sensing leads. Include surge protection for external wiring of each conductor-entry connection to components.

1. Minimum Protection for Power Connections 120 V and More: Auxiliary panel suppressors complying with requirements in Division 26 Section "Transient-Voltage Suppression for Low-Voltage Electrical Power Circuits."

2. Minimum Protection for Communication, Signal, Control, and Low-Voltage Power Connections: Comply with requirements in Division 26 Section "Transient-Voltage Suppression for Low-Voltage Electrical Power Circuits" as recommended by manufacturer for type of line being protected.

B. Tamper Protection: Tamper switches on enclosures, control units, pull boxes, junction boxes, cabinets, and other system components shall initiate a tamper-alarm signal when unit is opened or partially disassembled. Control-station control-unit alarm display shall identify tamper alarms and indicate locations.

2.03 CARD READERS

A. Power: Card reader shall be powered from its associated Controller, including its standby power source.

B. Response Time: Card reader shall respond to passage requests by generating a signal that is sent to the Controller. Response time shall be 800ms or less, from the time the card reader finishes reading the credential card until a response signal is generated.

C. Enclosure: Suitable for surface, semi-flush, or pedestal mounting. Mounting types shall additionally be suitable for installation in the following locations:

1. Indoors, controlled environment.

2. Indoors, uncontrolled environment.

3. Outdoors, with built-in heaters or other cold-weather equipment to extend the operating temperature range as needed for operation at the site.

D. Display: LED or other type of visual indicator display shall provide visual and audible status indications and user prompts. Indicate power on/off, whether user passage requests have been accepted or rejected, and whether the door is locked or unlocked.

E. Shall be utilized for controlling the locking hardware on a door and allows for reporting back to the main control panel with the time/date the door was accessed, the name of the person accessing the point of entry, and its location.

F. Will be fully programmable and addressable, locally and remotely, and hardwired to the system.

G. Shall be individually home run to the main panel.

H. Shall be installed in a manner that they comply with:

1. The Uniform Federal Accessibility Standards (UFAS)

2. The Americans with Disabilities Act (ADA)

3. The ADA Standards for Accessible Design

I. Shall support a variety of card readers that must encompass a wide functional range. The PACS may combine any of the card readers described below for installations requiring multiple types of card reader capability (i.e., card only, card and/or PIN, card and/or biometrics, card and/or pin and/or biometrics, supervised inputs, etc.). These card readers shall be available in the approved technology to meet FIPS 201, and is ISO 14443 A or B, ISO/IEC 7816 compliant. The reader output can be Wiegand, RS-22, 485 or TCP/IP.

J. Shall be housed in an aluminum bezel with a wide lead-in for easy card entry.

K. Shall contain read head electronics, and a sender to encode digital door control signals.

L. LED’s shall be utilized to indicate card reader status and access status.

M. Shall be able to support a user defined downloadable off-line mode of operation (e.g. locked, unlocked), which will go in effect during loss of communication with the main control panel.

N. Shall provide audible feedback to indicate access granted/denied decisions. Upon a card swipe, two audible tones or beeps shall indicate access granted and three tones or beeps shall indicate access denied. All keypad buttons shall provide tactile audible feedback.

O. Shall have a minimum of two programmable inputs and two programmable outputs.

P. All card readers that utilize keypad controls along with a reader and shall meet the following specifications:

1. Entry control keypads shall use a unique combination of alphanumeric and other symbols as an identifier. Keypads shall contain an integral alphanumeric/special symbols keyboard with symbols arranged in ascending ASCII code ordinal sequence. Communications protocol shall be compatible with the local processor.

Q. Shall include a Light Emitting Diode (LED) or other type of visual indicator display and provide visual or visual and audible status indications and user prompts. The display shall indicate power on/off, and whether user passage requests have been accepted or rejected. The design of the keypad display or keypad enclosure shall limit the maximum horizontal and vertical viewing angles of the keypad. The maximum horizontal viewing angle shall be plus and minus five (5) degrees or less off a vertical plane perpendicular to the plane of the face of the keypad display. The maximum vertical viewing angle shall be plus and minus 15 degrees or less off a horizontal plane perpendicular to the plane of the face of the keypad display.

1. Shall respond to passage requests by generating a signal to the local processor. The response time shall be 800 milliseconds or less from the time the last alphanumeric symbol is entered until a response signal is generated.

2. Shall be powered from the source as designed and shall not dissipate more than 150 Watts.

3. Shall be suitable for surface, semi-flush, pedestal, or weatherproof mounting as required.

4. Shall provide a means for users to indicate a duress situation by entering a special code.

R. Contactless Smart Cards and Readers

1. Smart card readers shall read credential cards whose characteristics of size and technology meet those defined by ISO/IEC 7816, 14443, 15693.

2. The readers shall have "flash" download capability to accommodate card format changes.

3. The card reader shall have the capability of reading the card data and transmitting the data to the main monitoring panel.

2.04 PUSH BUTTON SWITCHES

A. Push-Button Switches: Momentary-contact back-lighted push buttons, with stainless-steel switch enclosures.

1. Electrical Ratings:

a. Minimum continuous current rating of 10A at 240-VAC.

b. Contacts that will make 720 VA at 60A and that will break at 720 VA at 10A.

2. Enclosures: Flush or surface mounting. Push buttons shall be suitable for flush mounting in the switch enclosures.

3. Enclosures shall additionally be suitable for installation in the following locations:

a. Indoors, controlled environment.

b. Indoors, uncontrolled environment.

c. Outdoors.

4. Power: Push-button switches shall be powered from their associated Controller, using dc control.

2.05 INTERFACES

A. Power Supplies:

1. Shall be UL rated and able to adequately power new and existing entry control devices on a continuous basis without failure.

2. Shall meet the following minimum technical characteristics:

INPUT POWER	110 VAC 60 HZ
OUTPUT VOLTAGE	12 VDC Nominal (13.8 VDC) 24 VDC Nominal (27.6 VDC) Filtered and Regulated
BATTERY	Dependent on Output Voltage shall provide up to 24 hours of unpowered operation
CHARGING CIRCUIT	Built-in standard

2.06 WIRES AND CABLES

A. Provide device input cables as required by manufacturer.

PART 3 EXECUTION

3.01 GENERAL

A. The Contractor shall install all system components and appurtenances in accordance with the manufacturers' instructions, ANSI C2, and shall furnish all necessary interconnections, services, and adjustments required for a complete and operable system as specified. Control signals, communications, and data transmission lines grounding shall be installed as necessary to preclude ground loops, noise, and surges from affecting system operation. Equipment, materials, installation, workmanship, inspection, and testing shall be in accordance with manufacturers' recommendations and as modified herein.

B. Consult the manufacturers' installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc., before beginning system installation. Refer to the Riser/Connection diagram for all schematic system installation/termination/wiring data.

C. All equipment shall be attached to walls and ceiling/floor assemblies and shall be held firmly in place (e.g., sensors shall not be supported solely by suspended ceilings). Fasteners and supports shall be adequate to support the required load.

3.02 EXAMINATION

A. Examine pathway elements intended for cables. Check raceways, cable trays, and other elements for compliance with space allocations, installation tolerances, hazards to cable installation, and other conditions affecting installation.

B. Examine roughing-in for control cable conduit systems, Controllers, card readers, and other cable-connected devices to verify actual locations of conduit and back boxes before device installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.03 CABLING

A. Comply with NECA 1, "Good Workmanship in Electrical Contracting."

B. Install cables without damaging conductors, shield, or jacket.

C. Boxes and enclosures containing security system components or cabling, and which are easily accessible to employees or to the public, shall be provided with a lock. Boxes above ceiling level in occupied areas of the building shall not be considered to be accessible. Junction boxes and small device enclosures below ceiling level and easily accessible to employees or the public shall be covered with a suitable cover plate and secured with tamperproof screws.

3.04 CABLE APPLICATION

A. Comply with EIA/TIA-569, "Commercial Building Standard for Telecommunications Pathways and Spaces."

B. Cable application requirements are minimum requirements and shall be exceeded if recommended or required by manufacturer of system hardware.

C. RS-232 Cabling: Install at a maximum distance of 50 feet.

D. RS-485 Cabling: Install at a maximum distance of 4000 feet.

E. Card Readers and Keypads:

1. Install number of conductor pairs recommended by manufacturer for the functions specified.

2. Unless manufacturer recommends larger conductors, install No. 22 AWG wire if maximum distance from Controller to the reader is 250 feet, and install No. 20 AWG wire if maximum distance is 500 feet.

3. For greater distances, install "extender" or "repeater" modules recommended by manufacturer of the Controller.

4. Install minimum No. 18 AWG shielded cable to readers and keypads that draw 50 mA or more.

F. Install minimum No. 16 AWG cable from Controller to electrically powered locks. Do not exceed 500 feet of cable.

G. Install minimum No. 18 AWG ac power wire from transformer to Controller, with a maximum distance of 25 feet of cable.

3.05 INSTALLATION

A. System installation shall be in accordance with UL 294, manufacturer and related documents and references, for each type of security device installed.

B. Control Panels:

1. Connect power and signal lines to the controller.

2. Program the panel as outlined by the design and per the manufacturer’s programming guidelines.

C. Card Readers:

1. Connect all signal inputs and outputs as shown and specified.

2. Terminate input signals as required.

3. Program and address the reader as per the design package.

4. Readers shall be surface or flushed mounted and all appropriate hardware shall be provided to ensure the unit is installed in an enclosed conduit system.

3.06 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field testing. Report results in writing.

B. Perform the following field tests and inspections and prepare test reports:

1. Test each circuit and component of each system. Tests shall include, but are not limited to, measurements of power supply output under maximum load, signal loop resistance, and leakage to ground where applicable.

2. Operational Test: After installation of cables and connectors, demonstrate product capability and compliance with requirements. Test each signal path for

end-to-end performance from each end of all pairs installed. Remove temporary connections when tests have been satisfactorily completed.

END OF SECTION

PART 1 GENERAL

1.01 SUMMARY

A. Excavating for footings, slabs-on-grade, trenches, pits, curbs, and paving; backfill and compaction of sub-grade, base and trenches.

B. Excavated materials shall be removed from site and costs for transportation and removal included in Bid.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Submit list and source of materials to be used in the Work.

1.04 QUALITY ASSURANCE

A. Verify that survey benchmark and intended elevations for the Work are as indicated.

B. Comply with State of California Construction Safety Orders (CAL/OSHA)

1.05 UTILITY DISCONNECTS

A. Coordinate directly with County for any utility disconnects.

B. Notify Owner 72 hours prior to any excavation.

PART 2 PRODUCTS

2.01 MATERIALS

A. General: Fill material will be subject to approval of the Geotechnical Engineer.

B. Backfill and Fill Materials: Satisfactory soil materials free of clay, rock or gravel larger than 2 inches in any dimension, debris, waste, vegetation, and other unsuitable materials. Local and import fill should have less than 15% fines and a plasticity index (PI) of less than 20.

C. Aggregate Base: Class 2 conforming to Caltrans Specification Section 26, maximum size 3/4 inches; compact to minimum of 95 percent.

PART 3 EXECUTION

3.01 EXAMINATION

A. Identify required lines, levels, contours, and datum locations.

B. Locate, identify, and protect utilities that remain from damage.

C. Notify utility company to remove and relocate utilities if required.

D. Protect plant life, lawns, and other features remaining as a portion of final landscaping.

E. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.02 EXCAVATION AND COMPACTING

A. Saw cut all cuts into asphalt and/or concrete surfaces.

B. Excavate subsoil to accommodate building foundations, paving and site structures, construction operations, and as indicated on Drawings and/or in attached Project Geotechnical Report.

C. Cover soils stockpiles. Stockpiles shall be covered daily and covers maintained as well as perimeter erosion control.

D. Compact disturbed load-bearing soil in direct contact with foundations to original bearing capacity; perform compaction as directed by Geotechnical Engineer.

E. Support trench excavations in compliance with local codes and safety regulations.

F. Sheet Pile or shore all excavations as required.

G. Do not interfere with 45 degree bearing splay under foundations except at pile foundations or where shoring is designed to resist earth and foundation pressures without permitting any settlements of foundations, slabs, or similar structures.

H. Grade top perimeter of excavation to prevent surface water from draining into excavation.

I. Hand trim excavation. Remove loose matter.

J. Remove lumped subsoil, boulders, and rock larger than 2 inches in diameter.

K. Correct areas over-excavated as directed by Geotechnical Engineer.

L. Do not backfill trenches until tests and inspections have been made.

M. Compact to minimum of 95 percent dry density (ASTM 1557) in planted areas and a minimum of 95 percent dry density (ASTM 1557) in paved areas.

N. Footing bottoms should be free of loose debris and should be firm and unyielding as approved by the project Geotechnical Engineer prior to placement of steel and concrete.

END OF SECTION

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PART 1 GENERAL

1.01 SUMMARY

A. This Section describes the requirements for providing and installing temporary erosion control structures.

1.02 RELATED SECTIONS

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 QUALITY ASSURANCE

A. Reference Standards

1. California Stormwater Quality Association (CASQA) “Stormwater Best Management Practice Handbook for Construction”.

2. State Water Resources Control Board (SWRCB) standards

3. California Stormwater Quality Association “Stormwater Best Management Practice Handbook” for Construction and Industrial and Commercial Development, latest edition.

4. County of Mendocino, California “Small Construction Site Stormwater Erosion and Sediment Control Plan Template”, latest edition.

1.04 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Data, Reports and Certifications:

1. Materials used.

2. Erosion Control Point of Contract

PART 2 PRODUCTS

2.01 MATERIALS

A. Furnish and install the following as specified herein and required to eliminate potential erosion and sedimentation during construction works.

1. Outlet structure, basins, ditches
2. Filter fabric, and/or mesh
3. Concrete washout
4. Fiber rolls
5. Inlet protection
6. Stabilized construction entrance
7. Straw waddles

PART 3 EXECUTION

3.01 PROCEDURES.

A. Erosion and sedimentation control measures are to be installed in areas as indicated and as directed by governing regulations.

B. Erosion and sedimentation control measures shall be adjusted, relocated or new controls established for each phase of construction and for specific construction activities that may disturb soils and contribute to erosion.

END OF SECTION

PART 1 GENERAL

1.01 DESCRIPTION

A. This section shall cover site work concrete constructed upon the prepared subgrade and in conformance with the lines, grades, thickness, and cross sections shown. Construction shall include the following:

1. Curb, gutter, and combination curb and gutter.

2. Pedestrian Pavement: Walks and curb ramps.

3. Transformer and Emergency Generator slabs, walls, and footings.

4. Exterior retaining walls.

5. Exterior stairs and landings.

6. Light, sign and bollard foundations.

7. Site furnishings foundations.

8. Fencing and gate foundations.

9. Vehicle charging equipment foundations.

10. Accessible Parking Stalls

11. Miscellaneous exterior formed and unformed concrete.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 DESIGN REQUIREMENTS

A. Design all elements with the latest published version of applicable codes.

1.04 WEATHER LIMITATIONS

A. Placement of concrete shall be in conformance with ACI as specified under Section 03 30 00, CAST-IN-PLACE CONCRETE.

1.05 SELECT SUBBASE MATERIAL JOB-MIX

A. The Contractor shall retain and reimburse a testing laboratory to design a select subbase material mixture and submit a job-mix formula to the Owner's Representative, in writing, for approval. The formula shall include the source of materials, gradation, plasticity index, liquid limit, and laboratory compaction curves indicating maximum density at optimum moisture.

1.06 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Manufacturers' Certificates and Data certifying that the following materials conform to the requirements specified.

1. Expansion joint filler

2. Hot poured sealing compound

3. Reinforcement

4. Curing materials

C. Data and Test Reports: Select subbase material.

1. Job-mix formula.

2. Source, gradation, liquid limit, plasticity index, percentage of wear, and other tests as specified and in referenced publications.

1.07 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only. Refer to the latest edition of all referenced Standards and codes.

B. American Association of State Highway and Transportation Officials (AASHTO):

M031MM031-07-UL .....Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement (ASTM A615/A615M-09)

M055MM055-09-UL .....Steel Welded Wire Reinforcement, Plain, for Concrete (ASTM A185)

M147-65-UL .....Materials for Aggregate and Soil-Aggregate Subbase, Base and Surface Courses (R 2004)

M148-05-UL .....Liquid Membrane-Forming Compounds for Curing Concrete (ASTM C309)

M171-05-UL .....Sheet Materials for Curing Concrete (ASTM C171)

M182-05-UL .....Burlap Cloth Made from Jute or Kenaf and Cotton Mats

M213-01-UL ..... Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Type) (ASTM D1751)

M233-86-UL ..... Boiled Linseed Oil Mixer for Treatment of Portland Cement Concrete

T099-09-UL ..... Moisture-Density Relations of Soils Using a 2.5 kg. (5.5 lb) Rammer and a 305 mm (12 in.) Drop

T180-09-UL ..... Moisture-Density Relations of Soils Using a 4.54 kg (10 lb.) Rammer and a 457 mm (18 in.) Drop

C. American Society for Testing and Materials (ASTM):

C94/C94M-09 ..... Ready-Mixed Concrete

C143/C143M-09 ..... Slump of Hydraulic Cement Concrete

PART 2 PRODUCTS

2.01 GENERAL

A. Concrete shall be Type C, air-entrained as specified in Section 03 30 00, CAST-IN-PLACE CONCRETE, with the following exceptions:

TYPE	MAXIMUM SLUMP*
Curb & Gutter	75 mm (3")
Pedestrian Pavement	75 mm (3")
* For concrete to be vibrated: Slump as determined by ASTM C143. Tolerances as established by ASTM C94.	

2.02 REINFORCEMENT

A. The type, amount, and locations of steel reinforcement shall be as shown on the drawings and in the specifications.

B. Welded wire-fabric shall conform to AASHTO M55.

C. Dowels shall be plain steel bars conforming to AASHTO M31. Tie bars shall be deformed steel bars conforming to AASHTO M31.

2.03 SELECT SUBBASE (WHERE REQUIRED)

A. Subbase material shall conform to Section 31 23 00 “Excavating Backfilling and Compacting” and as shown on the Drawings.

B. Subbase material shall produce a compacted, dense-graded course, meeting the density requirement specified in these specifications and drawings.

2.04 FORMS

A. Use metal or wood forms that are straight and suitable in cross-section, depth, and strength to resist springing during depositing and consolidating the concrete, for the work involved.

B. Do not use forms if they vary from a straight line more than 3 mm (1/8 inch) in any 3000 mm (ten foot) long section, in either a horizontal or vertical direction.

C. Wood forms should be at least 50 mm (2 inches) thick (nominal). Wood forms shall also be free from warp, twist, loose knots, splits, or other defects. Use approved flexible or curved forms for forming radii.

2.05 CONCRETE CURING MATERIALS

A. Concrete curing materials shall conform to one of the following:

1. Burlap conforming to AASHTO M182 having a weight of 233 grams (seven ounces) or more per square meter (yard) when dry.

2. Impervious Sheeting conforming to AASHTO M171.

3. Liquid Membrane Curing Compound conforming to AASHTO M148 (ASTM C309), and shall be free of paraffin or petroleum.

2.06 EXPANSION JOINT FILLERS

A. Material shall conform to AASHTO M213.

PART 3 EXECUTION

3.01 SUBGRADE PENETRATION

A. Prepare, construct, and finish the subgrade as specified in Section 31 23 00, Excavating Backfilling and Compacting.

B. Maintain the subgrade in a smooth, compacted condition, in conformance with the required section and established grade until the succeeding operation has been accomplished.

3.02 SELECT SUBBASE (WHERE REQUIRED)

A. Mixing: Proportion the select subbase by weight or by volume in quantities so that the final approved job-mixed formula gradation, liquid limit, and plasticity index requirements will be met after subbase course has been placed and compacted. Add water in approved quantities, measured by weight or volume, in such a manner to produce a uniform blend.

B. Placing:

1. Place the mixed material on the prepared subgrade in a uniform layer to the required contour and grades, and to a loose depth not to exceed 200 mm (8

inches), and that when compacted, will produce a layer of the designated thickness.

2. When the designated compacted thickness exceeds 150 mm (6 inches), place the material in layers of equal thickness. Remove unsatisfactory areas and replace with satisfactory mixture, or mix the material in the area.

3. In no case will the addition of thin layers of material be added to the top layer in order to meet grade.

4. If the elevation of the top layer is 13 mm (1/2 inch) or more below the grade, excavate the top layer and replace with new material to a depth of at least 75 mm (3 inches) in compacted thickness.

C. Compaction:

1. Perform compaction with approved equipment (hand or mechanical) well suited to the material being compacted.

2. Moisten or aerate the material as necessary to provide the moisture content that will readily facilitate obtaining the specified compaction with the equipment used.

3. Compact each layer to at least 95 percent or 100 percent of maximum density as determined by AASHTO T180 or AASHTO T99 respectively.

D. Smoothness Test and Thickness Control:

Test the completed subbase for grade and cross section with a straight edge.

1. The surface of each layer shall not show any deviations in excess of 10 mm (3/8 inch).

2. The completed thickness shall be within 13 mm (1/2 inch) of the thickness as shown.

E. Protection:

1. Maintain the finished subbase in a smooth and compacted condition until the concrete has been placed.

2. When Contractor's subsequent operations or adverse weather disturbs the approved compacted subbase, excavate, and reconstruct it with new material meeting the requirements herein specified, at no additional cost to the Owner.

3.03 SETTING FORMS

A. Base Support:

1. Compact the base material under the forms true to grade so that, when set, they will be uniformly supported for their entire length at the grade as shown.

2. Correct imperfections or variations in the base material grade by cutting or filling and compacting.

B. Form Setting:

1. Set forms sufficiently in advance of the placing of the concrete to permit the performance and approval of all operations required with and adjacent to the form lines.

2. Set forms to true line and grade and use stakes, clamps, spreaders, and braces to hold them rigidly in place so that the forms and joints are free from play or movement in any direction.

3. Forms shall conform to line and grade with an allowable tolerance of 3 mm (1/8 inch) when checked with a straightedge and shall not deviate from true line by more than 6 mm (1/4 inch) at any point.

4. Do not remove forms until removal will not result in damaged concrete or at such time to facilitate finishing.

5. Clean and oil forms each time they are used.

C. The Contractor's Registered Professional Land Surveyor shall establish and control the alignment and the grade elevations of the forms or concrete slipforming machine operations.

1. Make necessary corrections to forms immediately before placing concrete.

2. When any form has been disturbed or any subgrade or subbase has become unstable, reset and recheck the form before placing concrete.

3.04 EQUIPMENT

A. The Owner's Representative shall approve equipment and tools necessary for handling materials and performing all parts of the work prior to commencement of work.

B. Maintain equipment and tools in satisfactory working condition at all times.

3.05 PLACING REINFORCEMENT

A. Reinforcement shall be free from dirt, oil, rust, scale or other substances that prevent the bonding of the concrete to the reinforcement.

B. Before the concrete is placed, the Owner's Representative shall approve the reinforcement, which shall be accurately and securely fastened in place with suitable supports and ties. The type, amount, and position of the reinforcement shall be as shown.

3.06 PLACING CONCRETE - GENERAL

A. Obtain approval of the Owner's Representative before placing concrete.

B. Remove debris and other foreign material from between the forms before placing concrete. Obtain approval of the Owner's Representative before placing concrete.

C. Before the concrete is placed, uniformly moisten the subgrade, base, or subbase appropriately, avoiding puddles of water.

D. Convey concrete from mixer to final place of deposit by a method which will prevent segregation or loss of ingredients. Deposit concrete so that it requires as little handling as possible.

E. While being placed, spade or vibrate and compact the concrete with suitable tools to prevent the formation of voids or honeycomb pockets. Vibrate concrete well against forms and along joints. Over-vibration or manipulation causing segregation will not be permitted. Place concrete continuously between joints without bulkheads.

F. Install a construction joint whenever the placing of concrete is suspended for more than 30 minutes and at the end of each day's work.

G. Workmen or construction equipment coated with foreign material shall not be permitted to walk or operate in the concrete during placement and finishing operations.

3.07 PLACING CONCRETE FOR CURB AND GUTTER, PEDESTRIAN PAVEMENT, AND EQUIPMENT PADS

A. Place concrete in the forms in one layer of such thickness that, when compacted and finished, it will conform to the cross section as shown.

B. Deposit concrete as near to joints as possible without disturbing them but do not dump onto a joint assembly.

C. After the concrete has been placed in the forms, use a strike-off guided by the side forms to bring the surface to the proper section to be compacted.

D. Consolidate the concrete thoroughly by tamping and spading, or with approved mechanical finishing equipment.

E. Finish the surface to grade with a wood or metal float.

F. All Concrete pads and pavements shall be constructed with sufficient slope to drain properly.

3.08 PLACING CONCRETE FOR VEHICULAR PAVEMENT

A. Deposit concrete into the forms as close as possible to its final position.

B. Place concrete rapidly and continuously between construction joints.

C. Strike off concrete and thoroughly consolidate by a finishing machine, vibrating screed, or by hand-finishing.

D. Finish the surface to the elevation and crown as shown.

E. Deposit concrete as near the joints as possible without disturbing them but do not dump onto a joint assembly. Do not place adjacent lanes without approval by the Owner’s Representative.

3.09 CONCRETE FINISHING - GENERAL

A. The sequence of operations, unless otherwise indicated, shall be as follows:

1. Consolidating, floating, straight-edging, troweling, texturing, and edging of joints.

2. Maintain finishing equipment and tools in a clean and approved condition.

3.10 CONCRETE FINISHING CURB AND GUTTER

A. Round the edges of the gutter and top of the curb with an edging tool to a radius of 1/4 inch or as otherwise detailed.

B. Float the surfaces and finish with a smooth wood or metal float until true to grade and section and uniform in textures.

C. Finish the surfaces, while still wet, with a bristle type brush with longitudinal strokes.

D. Immediately after removing the front curb form, rub the face of the curb with a wood or concrete rubbing block and water until blemishes, form marks, and tool marks have been removed. Brush the surface, while still wet, in the same manner as the gutter and curb top.

E. Except at grade changes or curves, finished surfaces shall not vary more than 1/8 inch for gutter and 1/4 inch for top and face of curb, when tested with a 10 foot straightedge.

F. Remove and reconstruct irregularities exceeding the above for the full length between regularly scheduled joints.

G. Correct any depressions which will not drain.

H. Visible surfaces and edges of finished curb, gutter, and combination curb and gutter shall be free of blemishes, form marks, and tool marks, and shall be uniform in color, shape, and appearance.

3.11 CONCRETE FINISHING PEDESTRIAN PAVEMENT

A. Walks, Wheelchair Curb Ramps:

1. Finish the surfaces to grade and cross section with a metal float, trowled smooth and finished with a broom moistened with clear water.

2. Medium brooming shall be transverse to the line of traffic.

3. Finish all slab edges, including those at formed joints, carefully with an edger having a radius as shown on the Drawings.

4. Unless otherwise indicated, edge the transverse joints before brooming. The brooming shall eliminate the flat surface left by the surface face of the edger. Execute the brooming so that the corrugation, thus produced, will be uniform in appearance and not more than 1/16 inch in depth.

5. The completed surface shall be uniform in color and free of surface blemishes, form marks, and tool marks. The finished surface of the pavement shall not vary more than 3/16 inch when tested with a 10 foot straightedge.

6. The thickness of the pavement shall not vary more than 1/4 inch.

7. Remove and reconstruct irregularities exceeding the above for the full length between regularly scheduled joints.

3.12 JOINTS - GENERAL

A. Place joints, where shown, conforming to the details as shown, and perpendicular to the finished grade of the concrete surface.

B. Joints shall be straight and continuous from edge to edge of the pavement.

3.13 EXPANSION JOINTS

A. Use a preformed expansion joint filler material of the thickness as shown to form expansion joints.

B. Material shall extend the full depth of concrete, cut and shaped to the cross section as shown, except that top edges of joint filler shall be below the finished concrete surface where shown to allow for sealing.

C. Anchor with approved devices to prevent displacing during placing and finishing operations.

D. Round the edges of joints with an edging tool.

E. Form expansion joints as follows:

1. Without dowels, about structures and features that project through, into, or against any site work concrete construction.

2. Using joint filler of the type, thickness, and width as shown.

3. Installed in such a manner as to form a complete, uniform separation between the structure and the site work concrete item.

3.14 CONSTRUCTION JOINTS

A. Locate longitudinal and transverse construction joints between slabs as shown.

B. Place transverse construction joints of the type shown, where indicated and whenever the placing of concrete is suspended for more than 30 minutes.

C. Use a butt-type joint with dowels in curb and gutter if the joint occurs at the location of a planned joint.

D. Use keyed joints with tiebars if the joint occurs in the middle third of the normal curb and gutter joint interval.

3.15 FORM REMOVAL

A. Forms shall remain in place at least 12 hours after the concrete has been placed. Remove forms without injuring the concrete.

B. Do not use bars or heavy tools against the concrete in removing the forms. Promptly repair any concrete found defective after form removal.

3.16 CURING OF CONCRETE

A. Cure concrete by one of the following methods appropriate to the weather conditions and local construction practices, against loss of moisture, and rapid temperature changes for at least seven days from the beginning of the curing operation. Protect unhardened concrete from rain and flowing water. All equipment needed for adequate curing and protection of the concrete shall be on hand and ready to install before actual concrete placement begins. Provide protection as necessary to prevent cracking of the pavement due to temperature changes during the curing period. If any selected method of curing does not afford the proper curing and protection against concrete cracking, remove and replace the damaged pavement and employ another method of curing as directed by the Owner's Representative.

B. Burlap Mat: Provide a minimum of two layers kept saturated with water for the curing period. Mats shall overlap each other at least 150 mm (6 inches).

C. Impervious Sheeting: Use waterproof paper, polyethylene-coated burlap, or polyethylene sheeting. Polyethylene shall be at lease 0.1 mm (4 mils) in thickness. Wet the entire exposed concrete surface with a fine spray of water and then cover with the sheeting material. Sheets shall overlap each other at least 300 mm (12 inches). Securely anchor sheeting.

D. Liquid Membrane Curing:

1. Apply pigmented membrane-forming curing compound in two coats at right angles to each other at a rate of 5 m2/L (200 square feet per gallon) for both coats.

2. Do not allow the concrete to dry before the application of the membrane.

3. Cure joints designated to be sealed by inserting moistened paper or fiber rope or covering with waterproof paper prior to application of the curing compound, in a manner to prevent the curing compound entering the joint.

4. Immediately re-spray any area covered with curing compound and damaged during the curing period.

3.17 CLEANING

A. After completion of the curing period:

1. Remove the curing material (other than liquid membrane).

2. Sweep the concrete clean.

3. After removal of all foreign matter from the joints, seal joints as herein specified.

4. Clean the entire concrete of all debris and construction equipment as soon as curing and sealing of joints has been completed.

3.18 PROTECTION

A. The contractor shall protect the concrete against all damage prior to final acceptance by the Owner. Remove concrete containing excessive cracking, fractures, spalling, or other defects and reconstruct the entire section between regularly scheduled joints, when

directed by the Owner's Representative, and at no additional cost to the Owner. Exclude traffic from vehicular pavement until the concrete is at least seven days old, or for a longer period of time if so directed by the Owner's Representative.

3.19 FINAL CLEAN-UP

A. Remove all debris, rubbish and excess material from the site.

END OF SECTION

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PART 1 GENERAL

1.01 DESCRIPTION

A. This work shall cover the composition, mixing, construction upon the prepared subgrade, and the protection of hot asphalt concrete pavement. The hot asphalt concrete pavement shall consist of an aggregate or asphalt base course and asphalt surface course constructed in conformity with the lines, grades, thickness, and cross sections as shown. Each course shall be constructed to the depth, section, or elevation required by the drawings and shall be rolled, finished, and approved before the placement of the next course.

B. This Section includes specifications for constructing new asphalt concrete wearing surface Type A, 1/2-inch maximum with medium grading.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 ALIGNMENT AND GRADE CONTROL

A. The Contractor’s Registered Professional Land Surveyor shall establish and control the pavement (aggregate or asphalt base course and asphalt surface course) alignments, grades, elevations, and cross sections as shown on the Drawings.

1.04 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Data and Test Reports:

1. Aggregate Base Course: Sources, gradation, liquid limit, plasticity index, percentage of wear, and other tests required by Section 39 of Caltrans Standard Specifications (CTSS).

2. Asphalt Base/Surface Course: Aggregate source, gradation, soundness loss, percentage of wear, and other tests required by Section 39 of CTSS.

3. Job-mix formula.

C. Certifications:

1. Asphalt prime and tack coat material certificate of conformance to Section 39 of CTSS requirements.

2. Asphalt cement certificate of conformance to CTSS requirements.

3. Job-mix certification - Submit plant mix certification that mix equals or exceeds Section 39 of CTSS.

4. Prior to starting construction, the Contractor shall submit the asphalt concrete mix design including the amount of asphalt binder to be mixed with the dry aggregate to the Engineer for approval. No resurfacing work will be allowed prior to the approval of the mix design. Asphalt concrete mix design shall conform to Section 39 of CTSS.

5. The Contractor shall submit electronic copies of manufacturer's literature, specifications, applications and installations for filler and/or sealer material to the Owner's Representative for approval at least five (5) calendar days in advance of performing the filling and/or sealing work.

1.05 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only. Refer to the latest edition of all referenced Standards and codes.

B. State of California Department of Transportation (CalTrans):

1. Standard Specifications (CTSS)

PART 2 PRODUCTS

2.01 GENERAL

A. Aggregate base, Asphaltic base and asphalt concrete materials shall conform to the requirements of the following and other appropriate sections of the latest version of Section 39 of CTSS, including amendments, addenda and errata. Where the term "Engineer" is referenced in Section 39 of CTSS, it shall mean the Owner's Representative.

2.02 MATERIALS

A. Asphalt: In accordance with the requirements of Section 39-2.01 of CTSS, except that asphalt shall be either PG 64-10 or AR-4000.

B. Aggregate: In accordance with the requirements of Section 39-2.02 of CTSS, except that aggregate grading shall be as follows:

Sieve Sizes	Limits of Proposed Gradation	Operating Range	Contract Compliance
3/4"	----------	100	100
1/2"	----------	95-100	89-100
3/8"	----------	80-95	75-100
No. 4	59-66	X$\pm$5	X$\pm$8

No. 8	43-49	X±5	X±8
No. 30	22-27	X±5	X±8
No. 200	----------	3-8	0-11

C. Minimum Durability Index: When tested in accordance with Caltrans Test Method 229 shall be 50.

D. Tack coat in accordance with Section 39 of CTSS.

2.03 EQUIPMENT

A. Spreading Equipment: In accordance with the requirements of Section 39 of CTSS.

B. Compacting Equipment: In accordance with the requirements of Section 9 of CTSS.

PART 3 EXECUTION

3.01 GENERAL

A. The Asphalt Concrete Paving equipment, weather limitations, job-mix formula, mixing, construction methods, compaction, finishing, tolerance, and protection shall conform to the requirements of the appropriate sections of Section 39 of CTSS for the type of material specified.

3.02 MIXING ASPHALTIC CONCRETE MATERIALS

A. Provide hot plant-mixed asphaltic concrete paving materials.

1. Temperature leaving the plant: 143 degrees C (290 degrees F) minimum, 160 degrees C (320 degrees F) maximum.

2. Temperature at time of placing: 138 degrees C (280 degrees F) minimum.

3.03 SUBGRADE

A. Shape to line and grade and compact with self-propelled rollers.

B. All depressions that develop under rolling shall be filled with acceptable material and the area re-rolled.

C. Soft areas shall be removed and filled with acceptable materials and the area re-rolled.

D. Should the subgrade become rutted or displaced prior to the placing of the subbase, it shall be reworked to bring to line and grade.

E. Proof-roll the subgrade with maximum 50 ton gross weight dump truck as directed by Owner's Representative. If pumping, pushing, or other movement is observed, rework the area to provide a stable and compacted subgrade.

3.04 BASE COURSES

A. Base:

1. Spread and compact to the thickness shown on the drawings.

2. Rolling shall begin at the sides and continue toward the center and shall continue until there is no movement ahead of the roller.

3. After completion of the base rolling there shall be no hauling over the base other than the delivery of material for the top course.

C. Thickness tolerance: Provide the compacted thicknesses shown on the Drawings within a tolerance of minus 0.0mm (0.0") to plus 12.7mm (0.5").

D. Smoothness tolerance: Provide the lines and grades shown on the Drawings within a tolerance of 5mm in 3m (3/16 inch in ten feet).

E. Moisture content: Use only the amount of moisture needed to achieve the specified compaction.

3.05 PLACEMENT OF ASPHALTIC CONCRETE PAVING

A. Remove all loose materials from the compacted base.

B. Apply the specified prime coat, and tack coat where required, and allow to dry in accordance with the manufacturer’s recommendations as approved by the Owner.

C. Receipt of asphaltic concrete materials:

1. Do not accept material unless it is covered with a tarpaulin until unloaded, and unless the material has a temperature of not less than 130 degrees C (280 degrees F).

2. Do not commence placement of asphaltic concrete materials when the atmospheric temperature is below 10 degrees C (50 degrees F), not during fog, rain, or other unsuitable conditions.

D. Spreading:

1. Spread material in a manner that requires the least handling.

2. Where thickness of finished paving will be 76mm (3") or less, spread in one layer.

E. Rolling:

1. After the material has been spread to the proper depth, roll until the surface is hard, smooth, unyielding, and true to the thickness and elevations shown own the drawings.

2. Roll in at least two directions until no roller marks are visible.

3. Finished paving smoothness tolerance:

a. No depressions which will retain standing water.

b. No deviation greater than 3mm in 1.8m (1/8" in six feet).

3.06 APPLICATION OF SEAL COAT

A. Prepare the surfaces, mix the seal coat material, and apply in accordance with the manufacturer's recommendations as approved by the Owner.

B. Apply one coat of the specified sealer.

C. Achieve a finished surface seal which, when dry and thoroughly set, is smooth, tough, resilient, of uniform black color, and free from coarse textured areas, lap marks, ridges, and other surface irregularities.

3.07 PROTECTION

A. Protect the asphaltic concrete paved areas from traffic until the sealer is set and cured and does not pick up under foot or wheeled traffic.

3.08 FINAL CLEAN-UP

A. Remove all debris, rubbish, and excess material from the work area.

END OF SECTION

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PART 1 GENERAL

1.01 DESCRIPTION

A. Section includes specifications for precast concrete wheel stops for vehicular parking stalls in parking structures and parking lots as indicated.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 REFERENCE STANDARDS

A. State of California, Department of Transportation Caltrans, Standard Specifications (CTSS)

1.04 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples.

B. Product Data: Submit manufacturers' product data of precast stops and epoxy adhesive for approval.

1.05 QUALITY ASSURANCE:

A. Precast wheel stops shall be manufactured for the intended purpose by a company or firm specializing in the manufacture of precast concrete parking appurtenances.

PART 2 PRODUCTS

2.01 MATERIALS

A. Wheel Stops: Precast, 3.5% minimum air-entrained concrete; 4000 psi minimum compressive strength. Each stop shall be reinforced with two No. 4 deformed steel reinforcing bars, minimum. Provide chamfered corners and drainage slots on underside, and provide holes for dowel-anchoring to substrate. Unless indicated otherwise, provide stops of half octagonal configuration and 30-inch length.

B. Adhesive for Anchoring Stops to Concrete Slabs, At-Grade Concrete Pavements, and At-Grade Asphalt Pavements: Epoxy adhesive manufactured for the purpose, similar and equal to the adhesives specified in Caltrans Standard Specifications, Section 95-2.04 or 95-2.05.

C. Adhesive for Bonding Dowel to Wheel Stop: As proposed by Contractor and approved by the Engineer, suitable for application.

D. Steel Bars for Installation: Galvanized 5/8” diameter steel dowels or galvanized

PART 3 EXECUTION

3.1 INSTALLATION

A. Securely attach wheel stops into at-grade concrete and at-grade asphalt pavement with not less than two galvanized steel dowels embedded in holes cast into wheel stops. Firmly bond each dowel to wheel stop and to pavement.

B. At concrete pavement, drill holes in pavement for dowels.

END OF SECTION

PART 1 GENERAL

1.01 DESCRIPTION

A. This work shall consist of furnishing and applying paint areas restricted to accessible stalls, crosswalks, energy stalls, and other detail pavement markings, in accordance with the details as shown or as prescribed by the Owner's Representative. Conform to the Manual on Uniform Traffic Control Devices for Streets and Highways, published by the U.S. Department of Transportation, Federal Highway Administration, CBC 2016, 11B and ADAAG 2010 for details not shown.

1.02 RELATED WORK

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 SUBMITTALS

A. Submit in accordance with Division 01, Submittals, Shop Drawings Product Data and Samples

B. Furnish Manufacturer's Certificates and Data certifying that the following materials conform to the requirements specified:

1. Paint.

1.04 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referenced in the text by the basic designation only.

B. Federal Specifications (Fed. Spec.):

TT-B-1325C .....Beads (Glass Spheres); Retro-Reflective

TT-P-1952D .....Paint, Traffic Black, and Airfield Marking, Waterborne

C. Master Painters Institute (MPI):

Approved Product List – 2019

PART 2 PRODUCTS

2.01 PAINT

A. Paint for marking pavement (parking lot and zone marking) shall conform to MPI No. 97, color as shown. Paint for obliterating existing markings shall conform to Fed. Spec. TT-P-1952D. Paint shall be in containers of at least 5 gallons. A certificate shall accompany each batch of paint stating compliance with the applicable publication.

2.02 PAINT APPLICATOR

A. Apply all marking by approved mechanical equipment. The equipment shall provide constant agitation of paint and travel at controlled speeds. Synchronize one or more paint "guns" to automatically begin and cut off paint flow in the case of skip lines. The equipment shall have manual control to apply continuous lines of varying length and marking widths as shown. Provide pneumatic spray guns for hand application of paint in areas where a mobile paint applicator cannot be used. If the equipment does not have a glass bead dispenser, use a separate piece of equipment. An experienced technician that is thoroughly familiar with equipment, materials, and marking layouts shall control all painting equipment and operations.

PART 3 EXECUTION

3.01 SURFACE PREPARATION

A. Allow new pavement surfaces to cure for a period of not less than 14 days before application of marking materials.

B. Thoroughly clean all surfaces to be marked before application of paint. Remove dust, dirt, and other granular surface deposits by sweeping, blowing with compressed air, rinsing with water, or a combination of these methods. Completely remove rubber deposits, existing paint markings, and other coatings adhering to the pavement with scrapers, wire brushings, sandblasting, mechanical abrasion, or approved chemicals as directed by the Owner’s Representative. The application of paint conforming to Fed. Spec. TT-P-1952D is an option to removal of existing paint markings on asphalt pavement. Apply the black paint in as many coats as necessary to completely obliterate the existing markings. Where oil or grease are present on old pavements to be marked, scrub affected areas with several applications of trisodium phosphate solution or other approved detergent or degreaser, and rinse thoroughly after each application. After cleaning, seal oil-soaked areas with cut shellac to prevent bleeding through the new paint. Pavement marking shall follow as closely as practicable after the surface has been cleaned and dried, but do not begin any marking until the Owner’s Representative has inspected the surface and gives permission to proceed. The Contractor shall establish control points for marking and provide templates to control paint application by type and color at necessary intervals. The Contractor is responsible to preserve and apply marking in conformance with the established control points.

3.02 APPLICATION

A. Apply uniformly painted and reflective pavement marking of required color(s), length, and width with true, sharp edges and ends on properly cured, prepared, and dried surfaces in conformance with the details as shown and established control points. The length and width of lines shall conform within a tolerance of plus or minus 3 inches and plus or minus

1/8 inch, respectively, in the case of skip markings. The length of intervals shall not exceed the line length tolerance. Temperature of the surface to be painted and the atmosphere shall be above 50 degrees F and less than 95 degrees F. Apply the paint at a wet film thickness of 0.015 inch. Disperse reflective glass beads evenly on the wet paint at a rate of 6 pounds per gallon of paint. Apply paint in one coat. At the direction of the Owner's Representative, markings showing light spots may receive additional coats. The maximum drying time requirements of the paint specifications will be strictly enforced, to prevent undue softening of asphalt, and pick-up, displacement, or discoloration by tires of traffic. If there is a deficiency in drying of the marking, discontinue paint operations until cause of the slow drying is determined and corrected. Remove and replace marking that is applied at less than minimum material rates; deviates from true alignment; exceeds stipulated length and width tolerances; or shows light spots, faulty distribution of beads, smears, or other deficiencies or irregularities. Use carefully controlled sand blasting, approved grinding equipment, or other approved method to remove marking so that the surface to which the marking was applied will not be damaged.

3.03 PROTECTION

A. Conduct operations in such a manner that necessary traffic can move without hindrance. Protect the newly painted markings so that, insofar as possible, the tires of passing vehicles will not pick up paint. Place warning signs at the beginning of the wet line, and at points well in advance of the marking equipment for alerting approaching traffic from both directions. Place small flags or other similarly effective small objects near freshly applied markings at frequent intervals to reduce crossing by traffic. Efface and replace damaged portions of markings at no additional cost to the Owner.

3.04 DETAIL PAVEMENT MARKING

A. Use Detail Pavement Markings, exclusive of actual traffic lane marking, at exit and entrance islands and turnouts, on curbs, at crosswalks, at parking bays, and at such other locations as shown. Show the International Accessibility Symbol at indicated parking spaces. Color shall be as shown. Apply paint for the symbol using a suitable template that will provide a pavement marking with true, sharp edges and ends. Place detail pavement markings of the color(s), width(s) and length(s), and design pattern at the locations shown.

3.05 FINAL CLEAN-UP

A. Remove all debris, rubbish and excess material from the site.

END OF SECTION

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PART 1 GENERAL

1.01 SUMMARY

A. This Section specifies furnishing and installing Cast In Place Detectable/Tactile Warning Surface Tiles where indicated. Not recommended for asphalt applications.

1.02 RELATED SECTIONS: Section(s) related to this section include:

A. Drawings All Sections listed in the Table of Contents are a Condition of this Section.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's literature describing products, installation procedures and routine maintenance.

B. Samples for Verification Purposes: Submit two (2) tile samples minimum 12"x12" of the kind proposed for use.

C. Shop drawings are required for products specified showing fabrication details, composite structural system, tile surface profile, sound on cane contact amplification feature, plans of tile placement including joints, and material to be used as well as outlining installation materials and procedure.

D. Material Test Reports: Submit complete test reports from qualified accredited independent testing laboratories to qualify that materials proposed for use are in compliance with requirements and meet or exceed the properties indicated on the specifications. All tests shall be conducted on a Cast In Place Detectable/Tactile Warning Surface Tile system as certified by a qualified independent testing laboratory.

E. Maintenance Instructions: Submit copies of manufacturer's specified installation and maintenance practices for each type of Detectable Warning Surface Tile and accessory as required.

1.04 QUALITY ASSURANCE

A. Provide Cast In Place Detectable/Tactile Warning Surface Tiles and accessories as produced by a single manufacturer with a minimum of five (5) years' experience in the manufacturing of Cast In Place Detectable/Tactile Warning Surface Tiles.

B. Installer's Qualifications: Engage an experienced Installer certified in writing by Cast In Place Detectable/Tactile Warning Surface Tile manufacturer as qualified for installation, who has successfully completed installations similar in material, design, and extent to that indicated for Project.

C. Americans with Disabilities Act (ADA): Provide Surface Applied Detectable/Tactile Warning Surface Tiles which comply with the detectable warnings on walking surfaces section of the Americans with Disabilities Act (Title III Regulations, 28 CFR Part 36 ADA STANDARDS FOR ACCESSIBLE DESIGN, Appendix A, Section 4.29.2 DETECTABLE WARNINGS ON WALKING SURFACES).

D. California Code of Regulations (CCR): Provide only approved DSAAC detectable warning products as provided in the California Code of Regulations (CCR) Title 24, Chapter 2,

Section 202 definition of ”Detectable Warning”. Section 11B-247 and 11B-705 “Detectable Warnings And Detectable Directional Texture”

E. Vitrified Polymer Composite (VPC) Cast in Place Warning tiles shall include continuous strand woven fiberglass sheet matrix embedded within an epoxy polymer composition with a ultra-violet coating employing aluminum oxide particles in the truncated domes. The tile shall incorporate an in-line pattern of truncated domes measuring nominal 0.2” height, 0.9” base diameter, and 0.45” top diameter, spaced center-to-center 2.35” to 2.40 as measured “In Line”. For wheelchair safety the field area shall consist of a non-slip surface with a minimum of 40 - 90° raised points 0.045” high, per square inch.

1. Dimensions: Cast In Place Detectable/Tactile Warning Surface Tiles shall be held within the following dimensions and tolerances:

   Length and Width: 36” x 60"

   Nominal Depth: 1.375 (1-3/8”) (+/-) 5% max.

   Face Thickness: 0.1875 (1 3/8”) (+/-) 5% max.

   Warpage of Edge: 0.5% max.

   Embedment Flange Spacing: shall be no greater than 3.1"

2. Water Absorption of Tile when tested by ASTM D 570-98 not to exceed 0.05%.

3. Slip Resistance of Tile when tested by ASTM C 1028-96 the combined Wet and Dry Static Co-Efficients of Friction not to be less than 0.80 on top of domes and field area.

4. Compressive Strength of Tile when tested by ASTM D 695-02a not to be less than 28,000 psi.

5. Tensile Strength of Tile when tested by ASTM D 638-03 not to be less than 19,000 psi.

6. Flexural Strength of Tile when tested by ASTM D 790-03 not to be less than 25,000 psi.

7. Chemical Stain Resistance of Tile when tested by ASTM D 543-95 (re approved 2001) to withstand without discoloration or staining - 10% hydrochloric acid, urine, saturated calcium chloride, black stamp pad ink, chewing gum, red aerosol paint, 10% ammonium hydroxide, 1% soap solution, turpentine, Urea 5%, diesel fuel and motor oil.

8. Abrasive Wear of Tile when tested by BYK - Gardner Tester ASTM D 2486-00 with reciprocating linear motion of 37± cycles per minute over a 10” travel. The abrasive medium, a 40 grit Norton Metallite sand paper, to be fixed and leveled to a holder. The combined mass of the sled, weight and wood block is tobe

   3.2 lb. Average wear depth shall not exceed 0.060 after 1000 abrasion cycles when measured on the top surface of the dome representing the average of three measurement locations per sample.

9. Resistance to Wear of Unglazed Ceramic Tile by Taber Abrasion per ASTM C501-84 (re approved 2002) shall not be less than 500.

10. Gardner Impact to Geometry "GE" of the standard when tested by ASTM D 5420-04 to have a mean failure energy expressed as a function of specimen thickness of

not less than 550 in. lbf/in. A failure is noted when a crack is visible on either surface or when any brittle splitting is observed on the bottom plaque in the specimen.

11. Accelerated Weathering of Tile when tested by ASTM G 155-05a for 3000 hours shall exhibit the following result – ΔE <4.5, as well as no deterioration, fading or chalking of surface of tile color No 33538

12. Accelerated Aging and Freeze Thaw Test of Tile and Adhesive System when tested to ASTM D 1037-99 shall show no evidence of cracking, delamination, warpage, checking, blistering, color change, loosening of tiles or other detrimental defects.

13. Salt and Spray Performance of Tile when tested to ASTM B 117-03 not to show any deterioration or other defects after 200 hours of exposure.

14. AASHTO HB-17 single wheel HS20-44 loading “Standard Specifications for Highways and Bridges”. The Cast In Place Tile shall be mounted on a concrete platform with a ½” airspace at the underside of the tile top plate then subjected to the specified maximum load of 10,400 lbs., corresponding to an 8000 lb individual wheel load and a 30% impact factor. The tile shall exhibit no visible damage at the maximum load of 10,400 lbs.

15. Embedment flange spacing shall be no greater than 3.1” center to center spacing as illustrated on the product Cast In Place drawing.

1.05 DELIVERY, STORAGE AND HANDLING

A. Cast In Place Detectable/Tactile Warning Surface Tiles shall be suitably packaged or crated to prevent damage in shipment or handling. Finished surfaces shall be protected by sturdy plastic wrappings to protect tile from concrete residue during installation and tile type shall be identified by part number.

B. Cast In Place Detectable/Tactile Warning Surface Tiles shall be delivered to location at building site for storage prior to installation.

1.06 SITE CONDITIONS

A. Environmental Conditions and Protection: Maintain minimum temperature of 40°F in spaces to receive Cast In Place Detectable/Tactile Warning Surface Tiles for at least 24 hours prior to installation, during installation, and for not less than 24 hours after installation.

B. The use of water for work, cleaning or dust control, etc. shall be contained and controlled and shall not be allowed to come into contact with the general public. Provide barricades or screens to protect the general public.

1.07 GUARANTEE

A. Cast In Place Detectable/Tactile Warning Surface Tiles shall be guaranteed in writing for a period of five (5) years from date of final completion. The guarantee includes defective work, breakage, deformation, fading and loosening of tiles.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Basis-Of-Design Manufacturer: ”Armor-Tile” as manufactured by Engineered Plastics Inc., Tel: 800-682-2525, or approved equal.

B. Product: The Vitrified Polymer Composite (VPC) Cast In Place Detectable/Tactile Warning Surface Tile.

C. Color: Yellow conforming to Federal Color No. 33538. Color shall be homogeneous throughout the tile.

PART 3 EXECUTION

3.01 INSTALLATION

A. During Cast In Place Detectable/Tactile Warning Surface Tile installation procedures, ensure adequate safety guidelines are in place and that they are in accordance with the applicable industry and government standards.

B. Prior to placement of the Cast In Place Detectable/Tactile Warning Surface Tile system, review manufacturer and contract drawings with the Contractor prior to the construction and refer any and all discrepancies to the Engineer.

C. The specifications of the structural embedment flange system and related materials shall be in strict accordance with the contract documents and the guidelines set by their respective manufacturers. Not recommended for asphalt applications.

D. The physical characteristics of the concrete shall be consistent with the contract specifications while maintaining a slump range of 4 - 7 to permit solid placement of the Cast In Place Detectable/Tactile Warning Surface Tile system. An overly wet mix will cause the tile to float. Under these conditions, suitable weights such as 2 concrete blocks or sandbags (25 lb) shall be placed on each tile.

E. The concrete pouring and finishing operations require typical mason’s tools, however, a 4’ long level with electronic slope readout, 25 lb. weights, and a large non-marring rubber mallet are specific to the installation of the Cast In Place Detectable/Tactile Warning Surface Tile system. A vibrating mechanism such as that manufactured by Vibco can be employed, if desired. The vibrating unit should be fixed to a soft base such as wood, at least 1 foot square.

F. The factory-installed plastic sheeting must remain in place during the entire installation process to prevent the splashing of concrete onto the finished surface of the tile.

G. When preparing to set the tile, it is important that no concrete be removed in the area to accept the tile. It is imperative that the installation technique eliminates any air voids under the tile. Holes in the tile perimeter allow air to escape during the installation process. Concrete will flow through the large holes in each embedment flange on the underside of the tile. This will lock the tile solidly into the cured concrete.

H. The concrete shall be poured and finished true and smooth to the required dimensions and slope prior to the tile placement. Immediately after finishing concrete, the electronic level should be used to check that the required slope is achieved. The tile shall be placed true and square to the curb edge in accordance with the contract drawings. The Cast In Place

Detectable/Tactile Warning Surface Tiles shall be tamped (or vibrated) into the fresh concrete to ensure that the field level of the tile is flush to the adjacent concrete surface. The embedment process should not be accomplished by stepping on the tile as this may cause uneven setting which can result in air voids under the tile surface. The contract drawings indicate that the tile field level (base of truncated dome) is flush to adjacent surfaces to permit proper water drainage and eliminate tripping hazards between adjacent finishes.

I. In cold weather climates it is recommended that the Cast In Place Detectable/Tactile Warning Surface Tiles be set deeper such that the top of domes are level to the adjacent concrete on the top and sides of ramp and that the base of domes to allow water drainage. This installation will reduce the possibility of damage due to snow clearing operations.

J. Immediately after placement, the tile elevation is to be checked to adjacent concrete. The elevation and slope should be set consistent with contract drawings to permit water drainage to curb as the design dictates. Ensure that the field surface of the tile is flush with the surrounding concrete and back of curb so that no ponding is possible on the tile at the back side of curb.

K. While concrete is workable, a 3/8" radius edging tool shall be used to create a finished edge of concrete, then a steel trowel shall be used to finish the concrete around the tile's perimeter, flush to the field level of the tile.

L. During and after the tile installation and the concrete curing stage, it is imperative that there is no walking, leaning or external forces placed on the tile that may rock the tile causing a void between the underside of tile and concrete.

M. Following tile placement, review installation tolerances to contract drawings and adjust tile before the concrete sets. Two suitable weights of 25 lb each may be required to be placed on each tile as necessary to ensure solid contact of the underside of tile to concrete.

N. Following the concrete curing stage, protective plastic wrap is to be removed from the tile surface by cutting the plastic with a sharp knife, tight to the concrete/tile interface. If concrete bled under the plastic, a soft brass wire brush will clean the residue without damage to the tile surface.

O. If desired, individual tiles can be bolted together using ¼ inch or equivalent hardware. This can help to ensure that adjacent tiles are flush to each other during the installation process. Tape or caulking can be placed on the underside of the bolted butt joint to ensure that concrete does not rise up between the tiles during installation. Any protective plastic wrap which was peeled back to facilitate bolting or cutting, should be replaced and taped to ensure that the tile surface remains free of concrete during the installation process.

P. Tiles can be cut to custom sizes, or to make a radius, using a continuous rim diamond blade in a circular saw or mini-grinder. Use of a straightedge to guide the cut is advisable where appropriate.

Q. Any sound-amplifying plates on the underside of the tile, which are dislodged during handling or cutting, should be replaced and secured with construction adhesive. The air gap created between these plates and the bottom of the tile is important in preserving the sound on cane audible properties of the Armor-Tile system as required in various jurisdictions.

3.02 CLEANING, PROTECTING AND MAINTENANCE

A. Protect tiles against damage during construction period to comply with Tactile Tile

manufacturer's specification.

B. Protect tiles against damage from rolling loads following installation by covering with plywood or hardwood.

C. Clean Tactile Tiles not more than four days prior to date scheduled for inspection intended to establish date of substantial completion in each area of project. Clean Tactile Tile by method specified by Tactile Tile manufacturer.

D. Comply with manufacturers maintenance manual for cleaning and maintaining tile surface and it is recommended to perform annual inspections for safety and tile integrity.

END OF SECTION

**********ATTENTION: This section contains multiple sections**********

SECTION 33 05 31.11 - POLYVINYL CHLORIDE (PVC) GRAVITY PIPE

PART 1 – GENERAL

1. 01 THE REQUIREMENT:

The Contractor shall furnish and install PVC pipe and all appurtenances as specified, complete and in place, as shown on the Plans, as specified in this Section and *Section 33 31 00 - Sanitary Sewerage Piping* and *Section 33 31 16 - Sanitary Sewer Gravity Service Laterals.*

1.02 RELATED WORK SPECIFIED ELSEWHERE:

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS:

A. Commercial Standards:

AWWA C900-07: Standard for Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. Through 12 In. (100 mm through 300 mm), for Water Transmission and Distribution

AWWA C905-08: Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14 In. Through 48 In. (350 mm Through 1,200 mm), for Water Transmission and Distribution

ASTM D 1784: Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.

ASTM D 2241: Specification for Poly (Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR-Series)

ASTM D 2321: Practice for Underground Installation of Thermoplastic Sewer Pipe for Sewers and Other Gravity-Flow Applications

ASTM D 3034: Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings

ASTM F 477: Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe

ASTM F 1674: Test Method for Joint Restraint Products

1.04 QUALITY ASSURANCE:

A. Except as modified in this Section, all materials used in the manufacture or installation of the pipe shall be tested in accordance with the requirements of the referenced standards.

B. Submittals and testing shall be done in compliance with *Section 33 01 30.11 - Inspection of Sewers.*

PART 2 – PRODUCTS

2.01 GENERAL:

All PVC pipe shall be continuously and permanently marked with the manufacturer's name, pipe size and pressure rating in psi.

2.02 PIPE:

A. All PVC pipe shall be joined by compression, solvent-welded, thermo-fusion welded or mechanical restrained joints as shown on the Plans.

B. Polyvinyl chloride pipe (PVC) shall conform to the requirements of ASTM D 3034, SDR-26, or AWWA C900 or C905, Class 100, 150, 165, 200, 253, or 305. Material for PVC pipe shall conform to the requirements of ASTM D 1784 for Class 12454-B or 12454-C as defined therein.

C. Flexible rubber rings for compression type joints for PVC pipe and fittings shall conform to the requirements of ASTM F 477.

D. All sun-faded pipe or pipe with noticeable surface defects will be rejected and shall be replaced by the Contractor.

2.03 COUPLINGS AND FITTINGS:

A. Couplings shall be as listed in the Approved Materials List.

B. All fittings for PVC pipe shall conform to the requirements of ASTM D 2241. The ring groove and gasket ring shall be compatible with PVC pipe ends.

C. The strength class of fittings shall be no less than the strength class of any adjoining pipe.

D. PVC fittings shall, at a minimum, conform to the requirements of ASTM D 3034 as they apply to type SDR-26 PVC Sewer Pipe using an Elastomeric Gasket Joint in a bell and spigot assembly system. Rubber sealing gaskets shall meet the requirements of ASTM F 477.

E. All PVC pipe entering or leaving a concrete structure shall have a rubber sealing gasket, as supplied by the pipe manufacturer, firmly seated perpendicular to the pipe axis, around the pipe banded and cast into the structure base or near the structure wall center as a water stop. Said water stop may also consist of a manhole coupling with rubber sealing rings cast into the structure base (see DWG 20-05).

2.04 RESTRAINED JOINTS FOR C900 PVC PIPE:

All restrained joints used in sanitary sewer applications shall meet or exceed the requirements of ASTM F 1674. All restrained joints shall be per the Approved Materials List.

PART 3 – EXECUTION

3.01 GENERAL:

A. Sewer pipelines shall be constructed in compliance with the requirements of this Section and *Section 33 31 00 - Sanitary Sewerage Piping* and *Section 33 31 16 - Sanitary Sewer Gravity Service Laterals.*

B. Work shall meet the specified requirements of these Specifications unless the requirements of the local agency having jurisdiction are greater, in which case the greater requirements shall govern.

3.02 INSTALLATION:

PVC pipe shall be installed in accordance with the requirements of ASTM D 2321; as specified herein and shown on the Plans

3.03 HORIZONTAL CURVES:

Horizontal curves shall be installed using straight pipe segments, each a minimum of five feet in length and joint deflections or fittings in accordance with the requirements of DWG 21-01, or with forced bends where the radius of the curve exceeds the minimums specified in the table below:

SDR-26 PVC Pipe (Forced Bends)				
Pipe Diameter	4"	6"	8"	10"
Minimum Radius	135’	200’	260’	322’

3.04 FIELD JOINTING:

A. Each pipe compression-type joint shall be joined with a lock-in rubber ring and a ring groove that is designed to resist displacement during pipe insertion.

B. The ring and the ring seat inside the bell shall be wiped clean before the gasket is inserted. A thin film of lubricant shall be applied to the exposed surface of the ring and to the outside of the clean pipe end. Lubricant other than that furnished with the pipe shall not be used.

C. Joints shall not be deflected either vertically or horizontally in excess of the printed recommendations of the pipe manufacturer.

END OF SECTION

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SECTION 33 05 19 - DUCTILE IRON PIPE (DIP)

PART 1 – GENERAL

1.01 THE REQUIREMENT:

The Contractor shall furnish and install ductile iron pipe (DIP) and all appurtenances as specified, complete and in place, as shown on the Plans, as specified in this Section and in *Section 33 31 00 - Sanitary Sewerage Piping* and *Section 33 31 16 - Sanitary Sewer Gravity Service Laterals.*

1.02 RELATED WORK SPECIFIED ELSEWHERE:

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS:

A. Commercial Standards:

ANSI/AWWA C110/A21.10: Ductile-Iron and Gray-Iron Fittings, 3 in. through 48 in. for Water and Other Liquids

ANSI/AWWA C111/A21.11: Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings

ANSI/AWWA C115/A21.15: Flanged Ductile-Iron and Gray-Iron Pipe with Threaded Flanges

ANSI/AWWA C150/A21.50: Thickness Design of Ductile-Iron Pipe

ANSI/AWWA C151/A21.51: Ductile-Iron Pipe, Centrifugally Cast

ANSI/AWWA C153/A21.53: Ductile-Iron Compact Fittings, 3 in. through 12 in. for Water and Other Liquids

AWWA C600: Installation of Ductile-Iron Water Mains and Their Appurtenances

1.05 QUALITY ASSURANCE:

A. Except as modified in this Section, all materials used in the manufacture or installation of the pipe shall be tested in accordance with the requirements of the referenced standards.

B. Submittals and testing shall be done in compliance with Section 33 01 30.11 - Inspection of Sewers.

PART 2 – PRODUCTS

2.01 GENERAL:

A. Ductile-iron pipe (DIP) shall conform to the latest revision of ANSI/AWWA C150/A21.50 subject to the following supplemental requirements. The pipe shall be furnished complete with rubber gaskets, and all special fittings shall be provided as shown on the Plans.

B. Bell and spigot joints and mechanical joints are acceptable for underground applications. As an alternative to bell and spigot joints the use of mechanical and flanged joints will be permitted for above ground applications only.

2.02 PIPE:

Ductile iron pipe shall be of the diameter indicated at a minimum Class 52 and shall be manufactured with standard bell and spigot joints in accordance with the latest revision of ANSI/AWWA C151/A21.51.

2.03 LINING AND COATING:

Pipe shall have standard asphaltic coating on the exterior and be epoxy lined on the interior with Protecto 401™ ceramic epoxy lining as manufactured by U.S. Pipe, or approved equal.

2.04 FITTINGS:

A. Fittings shall be ductile iron at a minimum of Class 52. Fittings shall conform to the latest revision of either ANSI/AWWA C110/A21.10 or ANSI/AWWA C153/A21.53. Fittings and accessories shall be furnished with either Push-on or Mechanical Type Joints in accordance with ANSI/AWWA C111/A21.11.

B. Ductile-iron pipe and fittings shall be furnished with mechanical joints, push-on joints, flanged joints, and/or restrained joints, as required. Bolted joints shall not be used for underground installations.

1. Mechanical and push-on bell and spigot joints shall conform to ANSI/AWWA C111/A21.11 and be furnished complete with all necessary accessories.

2. Flanged joints shall conform to ANSI/AWWA C115/A21.15.

3. Restrained joints shall be per the Approved Materials List.

PART 3 – EXECUTION

3.01 GENERAL:

A. Sewer pipelines shall be constructed in compliance with the requirements of this Section and *Section 33 31 00 - Sanitary Sewerage Piping* and *Section 33 31 16 - Sanitary Sewer Gravity Service Laterals.*

B. Work shall meet or exceed the requirements of these Specifications unless applicable requirements of an agency having jurisdiction (including the terms and conditions of an encroachment permit issued by a city or county) are greater, in which case the greater requirements shall govern.

3.02 INSTALLATION OF PIPE:

A. All pipe shall be installed in accordance with ANSI/AWWA C600.

3.03 RUBBER-GASKETED JOINTS:

A. Immediately before jointing pipe, the bell end of the pipe shall be thoroughly cleaned, and a clean rubber gasket, lubricated with an approved vegetable-based lubricant, shall be placed in the bell groove. The spigot end of the pipe shall be carefully cleaned and lubricated with a vegetable-based lubricant. The spigot end of the pipe section shall then be inserted into the bell of the previously laid joint and pushed into its proper position. Tilting of the pipe to insert the spigot into the bell will not be permitted.

END OF SECTION

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SECTION 31 23 16 - EXCAVATION, BEDDING AND BACKFILL

PART 1 – GENERAL

1.01 THE REQUIREMENT:

The Contractor shall provide all labor, materials, and equipment necessary to perform all excavation, bedding, backfill and grading operations required for construction of the work.

1.02 RELATED WORK SPECIFIED ELSEWHERE:

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS:

A. Commercial Standards:

ASTM D 1556: Test Method for Density and Unit Weight of Soil in Place by Sand-Cone Method

ASTM D 1557: Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kNm/m3))

ASTM D 2419: Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregates

ASTM D 2487: Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)

ASTM D 6938: Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

ASTM D 4253: Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table

ASTM D 4254 Test Methods for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density

1.04 CONTRACTOR SUBMITTALS:

A. Compaction testing of bedding and backfill materials shall be required for all main sewer extensions and laterals in public streets.

B. Compaction testing of bedding and backfill for side sewer work on private property may be required at the discretion of the Inspector.

C. The required compaction testing shall be conducted under the direction of a Civil or Geotechnical Engineer licensed by the State of California. As a condition of Central San's Final Inspection, a Certification Report indicating that compaction results meet or exceed the requirements of these Specifications shall be submitted by the engineer in responsible charge of the compaction testing with a cover letter bearing the engineer's professional stamp.

D. Compaction testing shall be completed prior to the acceptance televising of the sewer and installation of final paving.

1.05 QUALITY ASSURANCE:

A. Where soil material is required to be compacted to a percentage of maximum density, the maximum density at optimum moisture content will be determined in accordance with ASTM D 1557. Where cohesionless, free draining soil material is required to be compacted to a percentage of relative density, the calculation of relative density will be determined in accordance with ASTM D 4253 and D 4254. Field density in-place tests will be performed in accordance with ASTM D 1556, ASTM D 6938, or by such other means acceptable to Central San. At a minimum, compaction tests shall be conducted for each 50 feet of trench and for each 2 feet of trench depth, unless otherwise specified by the agency with jurisdiction for the roadway.

B. If a first test and a subsequent re-test of the bedding or backfill show noncompliance with the density required under this Section, the Contractor shall remove and re-compact the material represented by the test/retest as necessary to ensure compliance.

C. The Contractor shall provide access in the excavation for the soil compaction testing technician or Inspector. This shall include providing site-specific safety equipment and temporary shoring to enable compaction testing at each required level within the excavation. Should the Contractor have backfilled to an elevation above that required to be tested, he shall excavate the backfill down to the necessary level for testing and provide shoring at his cost. Subsequent backfilling shall also be at the Contractor's cost.

PART 2 – PRODUCTS

2.01 SUITABLE BEDDING AND BACKFILL MATERIAL:

A. Bedding and backfill material shall be selected or processed clean, free from grass, roots, brush, other vegetation, debris, refuse or other deleterious material of any kind.

B. The following types of bedding and backfill materials are designated and defined as follows:

1. Type I Bedding and Backfill Material (Class 2 Aggregate Base): Shall be newly quarried or recycled material (not mined alluvial material), and shall be certified by the quarry or recycler as complying with the provisions of Caltrans Specifications Section 26 (Class 2 Aggregate Base) for 3/4" maximum grading.

2. Type III Bedding and Backfill Material (native material from trench excavation): Shall be free from vegetable matter, debris and refuse, shall contain no concrete, stones or clods larger than 3" in any dimension and shall contain sufficient fines so that all voids will be filled when compacted, and shall be so constituted that compaction requirements can be met.

3. Select Type III Bedding and Backfill Material (native material from trench excavation): Shall meet all requirements of the above described Type III Bedding and Backfill Material with the additional requirement that the maximum particle size shall be 3/4" in diameter.

4. Coarse Bedding Material (Drain Rock/Foundation Rock): Shall be crushed stone or gravel (not mined alluvial material), with a minimum of 95% crushed particles per CTM 205, durable and free from slaking or decomposition under action of alternate wetting and drying with minimum Durability Index of 40 per CTM 229. The material shall meet the following gradation requirements:

Sieve Size	Percentage Passing
2-inch	100
1-1/2-inch	90-100
3/4-inch	5-30
3/8-inch	0-5
No. 200	0–2

C. Controlled Low Strength Material shall conform to the requirements of *Section 03 34 13 - Controlled Low-Strength Material (CLSM).*

2.02 UNSUITABLE MATERIAL:

A. Unsuitable materials for bedding and backfill shall include soils, which when classified under ASTM D 2487 fall in the classifications of PT, OH, CH, MH, or OL. In addition, any soil that cannot be sufficiently compacted to achieve the percentage of maximum density specified for the intended use shall be considered unsuitable.

B. Chemical testing for corrosivity shall be performed for all materials proposed for use as bedding and backfill for metallic or reinforced concrete pipe. The testing shall be in accordance with the requirements of CTM 417, CTM 422 and CTM 643. Bedding and backfill materials shall be considered unsuitable when the chloride concentration exceeds 500 ppm, sulfate concentration exceeds 1,500 ppm, resistivity is less than 2,000 ohm-cm

or pH is less than 6.5. Testing shall be performed by a qualified laboratory approved by Central San, and the data shall be submitted to the Inspector for acceptance prior to use of the material in the work.

C. Type III materials which are too wet to be compacted to specified compaction shall not be rejected solely because they are too wet for proper compaction. The Contractor may at its option, dry these materials in accordance with Paragraph 3.8.G of this section prior to compaction. Alternatively, the Contractor may remove the Type III materials and provide imported backfill material.

D. Backfill placed within 6” of any structure or pipe shall be free of rocks or unbroken clods of earth larger than 3” in any dimension.

E. All material that is determined to be unsuitable for use as bedding and backfill or that is in excess of the amount required shall be removed immediately and disposed of properly by the Contractor.

2.03 USE OF SUITABLE BEDDING AND BACKFILL MATERIAL:

Backfill types shall be used in accordance with the following provisions:

A. Pipe zone backfill (bedding, haunching and shading), as defined under paragraph 3.6 Bedding and Backfill herein, shall be Type I Bedding and Backfill Material (Class 2 Aggregate Base) unless otherwise specified on the Plans.

B. Trench zone backfill, as defined under paragraph 3.6 Bedding and Backfill herein, for pipelines in public and private streets and other paved areas shall be Type I Bedding and Backfill Material (Class 2 Aggregate Base).

C. Trench zone backfill in future roadway or street rights-of-way or in off road locations (e.g., easements) may be Type III Bedding and Backfill Material (native trench soil) so long as specified compaction is achieved.

D. Final Backfill as defined under "Pipe and Utility Trench Backfill herein, for pipelines in public and private streets and other paved areas shall be Type I Bedding and Backfill Material (Class 2 Aggregate Base).

E. Backfill around structures, vaults, and valve boxes shall be Type I Bedding and Backfill Material (Class 2 Aggregate Base).

F. Backfill used to replace structure and pipeline trench over-excavation of wet or soft trench bottom conditions shall be Coarse Bedding and Backfill Material (Drain Rock/Foundation Rock) with a geotextile envelope (minimum one-foot overlap) around the rock to prevent migration of fines.

G. Controlled Low Strength Material may be used for pipe zone backfill and trench zone backfill whenever pre-approved in writing by Central San or shown on the Plans.

H. Trenches in landscaped or cultivated areas shall have the top 12” inches backfilled with topsoil.

2.04 FILTER FABRIC:

Filter fabric shall be as specified in *Section 31 05 19 - Geosynthetics for Earthwork*.

2.05 TRENCH DAMS, AND PIPE ANCHORS:

Trench Dams and Pipe Anchors shall be provided at the locations shown on the Plans and shall be constructed as shown in the Standard Drawings as follows:

- *DWG 20-05 Trench Dams*
- *DWG 21-03 Pipe Anchor Detail*

Trench dams shall be of the length and width dimensions shown in the detail, shall extend below finished grade as shown in the detail, and shall be constructed of controlled low strength material (CLSM) as specified in *Section 03 34 13 - Controlled Low-Strength Material (CLSM).*

PART 3 – EXECUTION

3.01 GENERAL:

A. Work shall meet or exceed the requirements of these Specifications unless applicable requirements of an agency having jurisdiction (including the terms and conditions of an encroachment permit issued by a city or county) are greater, in which case the greater requirements shall govern.

B. Prior to any excavation and backfill work, the Contractor shall obtain and provide Central San with copies or other evidence of acquisition thereof, all required permits for the work, including but not limited to: County and/or City encroachment permits, Central San permits, Cal OSHA Excavation Permit, and Competent Person certification.

C. Material to be used for backfill shall be laid alongside of the trench and kept trimmed so as to cause as little inconvenience as possible to public travel and the normal use of adjacent properties. However, stockpiled material shall be kept a minimum of two feet from the edge of the trench and the face of the stockpile shall be sloped as needed. Free access shall be provided to all fire hydrants, water gates, meters, and private drives. Gutters or other drainage ways shall be kept clear unless other temporary provisions are made for maintaining drainage.

D. In advance of placing sewer pipe or structures, material within the area where such pipe or structures are to be placed, which in the opinion of the Inspector is unsuitable including, but not limited to vegetable matter, garbage, and junk piles, either on the surface or buried, shall be removed and disposed of.

E. Water to control dust resulting from grading operations, excavation, backfill, and the passage of traffic through the work area shall be applied by means that will ensure a uniform application of water with no runoff.

F. The Contractor shall remove and dispose of all excess excavated material at a suitable preferred site(s). The Contractor shall obtain all necessary fill and grading permits and a written release from property owners upon completion of use of said sites.

3.02 STRUCTURE EXCAVATION:

A. Except when specifically provided to the contrary, excavation shall include the removal of all materials of whatever nature encountered, including all obstructions of any nature that would interfere with the proper execution and completion of the work. The removal of

these materials shall conform to the lines and grades shown on the Plans or as directed by the Inspector Unless otherwise provided, the entire construction site shall be stripped of all vegetation and debris, and such material shall be removed from the site prior to performing any excavation or placing any fill. The Contractor shall furnish, place, and maintain all supports and shoring that may be required for the sides of the excavations, and all pumping, ditching, or other measures required for the removal or exclusion of water, including storm water, groundwater, and wastewater reaching the site of the work from any source so as to provide dry working conditions and to prevent damage to the work or adjoining property. Excavations shall be benched, sloped, shored or otherwise supported in a safe manner in accordance with applicable State safety requirements and the requirements of OSHA Safety and Health Standards for Construction (29CFR1926).

F. Excavation under structures, manholes, vaults and others: Except where otherwise specified for a particular structure or directed by the Inspector, excavation shall be carried to the grade of the bottom of the bedding. Where shown on the Plans or directed by the Inspector, areas beneath structures shall be over-excavated. The exposed surface shall be scarified to a depth of 6”, brought to optimum moisture content, and compacted to 95% relative compaction. Where over-excavation is directed by the Inspector to provide for the placement of foundation rock over wet or soft soils, scarification and recompaction shall not be performed.

3.03 TRENCH EXCAVATION:

A. Excavation for sewers shall be made only after pipe and other necessary materials are delivered on the site of the work. After such delivery, trench excavation shall proceed as rapidly as possible, and the pipe installed and the trench backfilled without undue delay. In public street areas, excavation and pipe installation shall be coordinated to the end that a minimum of interference with traffic will result.

B. Refer to table below for required trench widths according to nominal pipe size.

Pipe Size (in)	Trench Width (in)
2-4	18
6-8	24
10-12	30
14-18	36
24	42

C. The pipe bedding shall be given a final trim, using a laser for establishing grade, such that each pipe section when first laid will be continually in contact with the bedding along the bottom of the pipe. The Contractor shall excavate bell holes at pipe joints.

D. For trenching in existing streets, excavation and pipe installation shall be coordinated so that no more than 100 linear feet of trench shall be open at any time. Backfilling operations shall closely follow pipe installation. In new subdivisions more than 100 feet of trench may be opened if allowed by the Inspector and if the excavation is properly shored, sloped or benched. All trenches shall be fully backfilled at the end of each day or, properly shored and covered by heavy steel plates adequately braced and capable of supporting H-20 vehicle loads in those locations subject to traffic and with 1- 1/8” plywood in off road locations where it is impractical to backfill at the end of each day. Use of steel traffic plates is subject to the prior approval of the agency issuing the encroachment permit. Traffic plates shall be staked in place, with adjacent plates tack-welded together, and shall be provided with non-skid coating. Compacted cold mix asphalt shall be placed around the plate perimeter to provide a smooth transition from adjacent pavement.

E. Where the bottom of the trench becomes soft or is unstable due to groundwater and/or movement of construction equipment, the Contractor shall over-excavate unsuitable material to a minimum depth of 9” below the base elevation to establish a stable foundation for the bedding or to a depth as otherwise directed by the Inspector. Geotextile shall be placed on the overexcavated trench bottom and staked to the trench walls, coarse bedding material in conformance with these specifications shall be placed on the fabric, and the fabric shall then be un-staked from the trench wall and wrapped over the coarse bedding material forming a closed envelope with a minimum 1-foot overlap at the top edges of the fabric.

F. Any over-excavation carried below the grade ordered, specified, or shown, shall be backfilled and compacted to the required grade with the specified material.

3.04 EMBANKMENT EXCAVATION:

A. The relative compaction of the natural ground area upon which embankments are to be constructed, for a depth of not less than 2 feet below finished grade, shall be not less than 90% relative compaction.

B. If finished grade is less than 3 feet, above natural ground, the natural ground shall be excavated to a depth of not less than 3 feet below finished grade and re-compacted to a relative compaction of not less than 90%.

C. When embankments are to be made and compacted on hillsides, or where new fill is to be compacted against existing embankments, the slopes of the original hillside, old or new fill, shall be cut into a minimum of 6 feet horizontally as the work is brought up in layers. Material thus cut out shall be re-compacted along with the new fill. Fill shall be compacted to a relative compaction of not less than 90%.

3.05 BEDDING AND BACKFILL:

A. Except for required foundation material (in an envelope of geotextile) coarse bedding material being placed in over-excavated areas, where water or soft ground is present, backfill shall not be placed until after all water is removed from the excavation.

B. Pipe zone bedding and backfill operations shall be performed in accordance with the following requirements:

1. Type I Bedding and Backfill Material (Class 2 Aggregate Base) shall be placed and properly compacted in the pipe zone. The pipe zone is defined as that portion of the vertical trench cross-section lying between a plane 4 to 6” below the bottom surface of the pipe, i.e., the trench sub-grade, and a plane at a point 12” above the top outside surface of the pipe. The subzones of the pipe zone are defined as follows:

a) "Bedding is that portion of the Pipe Zone between the bottom of the trench or the top of required foundation material and the lowest point on the outside surface of the pipe barrel excepting bells;

b) "Haunching" is that portion of the Pipe Zone between the top of the Bedding and the horizontal centerline of the pipe;

c) "Shading" is that portion of the Pipe Zone between the top of the Haunching and a horizontal plane 12” above the highest point on the outside surface of the pipe barrel excepting bells.

2. Controlled Low Strength Material (CLSM) shall be provided in lieu of Type I Bedding and Backfill Material where indicated on the Plans Contractor shall provide a method to prevent pipe from floating during backfill. (The remaining portions of the trench shall be backfilled as specified elsewhere in this Section.)

3. After compacting the bedding, the Contractor shall perform a final trim using a laser for establishing grade, such that each pipe section when laid will be continually in contact with the bedding along the bottom of the pipe. The Contractor shall provide bell holes at each pipe joint.

4. Backfill in trenches shall be placed uniformly on each side of the pipe to prevent displacement. The Contractor shall exercise care to prevent damage to the pipeline coating, cathodic bonds, or the pipe itself during the installation and backfill operations. The Contractor shall hand shovel slice the bedding along the sides of the pipe in order to ensure filling any voids under the pipe haunches.

C. Warning Tape: A colored detectable metallic foil core plastic tape, at least 3” in width, shall be placed on top of the pipe zone backfill wherever sewers are installed. The tape shall have printed on it the words “Caution: Sewer Buried Below.” The warning tape shall be utilized for all pipes (mains and laterals).

D. After the pipe zone backfill has been placed as specified above, and after all excess water has completely drained from the trench, backfilling of the trench zone may proceed. The trench zone is defined as that portion of the trench excavation between the top of the shading and the ground surface in unpaved areas, and the horizontal plane at lowest point of the pavement structural section in paved areas.

E. "Final Backfill" is that portion of the Trench Zone in paved areas between the top of the trench backfill and the lowest point of the pavement structural section.

F. Joint utility trench excavations shall conform to the requirements shown on *DWG 20-06*.

3.06 PLACING AND SPREADING OF BACKFILL AND EMBANKMENT MATERIALS:

A. Backfill materials shall be placed and spread evenly in layers. The backfill layers shall be evenly spread so that each layer shall not exceed 8” in uncompacted thickness. Backfill layers greater than 8” but no more than 24” may be used after the Contractor demonstrates by compaction testing as specified in 3.8 below, that required compaction levels will be achieved.

B. During spreading, each layer shall be thoroughly mixed as necessary to promote uniformity of material in each layer. Pipe zone backfill materials shall be manually spread around the pipe so that when compacted, the pipe zone backfill will provide uniform bearing and side support.

C. Where the backfill material moisture content is below the optimum moisture content, water shall be added before or during spreading until the proper moisture content is within the range where the specified compaction can be achieved.

D. Where the backfill material moisture content is too high to permit the specified degree of compaction, the material shall be bladed, aerated or dried and/or mixed with dryer material until the moisture content is satisfactory.

E. Whenever selection is possible, embankment material having a sand equivalent value of less than 10 shall be deposited in the lower portions of embankments and no such material shall be placed within 3 feet of planned finished grade.

F. When the embankment material consists of large rocky material, or hard lumps such as hardpan or cemented gravel which cannot be broken readily, such material shall be well distributed throughout the embankment, and sufficient earth or other fine material shall be placed around the large material as it is deposited so as to fill the interstices and produce a dense compact embankment, but in no case shall any material exceed 24” in any dimension.

3.07 COMPACTION OF BACKFILL AND EMBANKMENT MATERIALS:

A. The Contractor shall provide a minimum of one compaction test per day, and an additional compaction test for each 500 sf completed and at each structure (e.g. manholes), and as required on the Plans or at the direction of the Central San Inspector.

B. Each layer of backfill material as defined herein, shall be mechanically compacted to the specified percentage of maximum density. Equipment that is consistently capable of achieving the required degree of compaction shall be used and each layer shall be compacted over its entire area while the material is at the required moisture content. Compaction at the top of the pipe zone shall be done using a plate compactor.

C. Flooding, ponding, or jetting shall not be used.

D. Equipment weighing more than 10,000 pounds shall not be used within a horizontal distance equal to the depth of the trench. Hand operated power compaction equipment shall be used where use of heavier equipment is impractical or restricted due to weight limitations.

E. The following compaction requirements shall be in accordance with ASTM D 1557 except for free draining materials (i.e., Coarse Bedding Material/Drain Rock/Foundation Material), which shall be in accordance with ASTM D 4253 and D 4254 for cohesionless free draining type materials. Where other public agency, utility company or encroachment permit requirements govern, the highest compaction standards shall apply.

Percent (%) Location or Use of Fill	Relative Compaction
Pipe zone backfill including bedding and over excavated foundation zone	90
Final backfill beneath paved areas or structures.	95
Trench backfill in unpaved easement or future street areas.	90
Trench Zone backfill.	90
Backfill under structures.	95
Backfill around structures under paved areas.	95
Backfill around structures in landscaped areas.	90
Embankment material	90

F. The Contractor shall maintain the indicated trench cross section at a minimum of 12” above the top of the pipe (the top of the “pipe zone”).

G. Embankments shall be constructed as recommended by the geotechnical engineer in compacted layers of uniform thickness.

H. At the time of compaction, the moisture content of embankment material shall be such that the relative compactions specified will be obtained and the embankment will be in a

firm and stable condition. Embankment material which contains less than the required moisture content shall be watered and material which contains excessive moisture shall not be compacted until the material is dry enough to obtain the required compaction.

3.08 TEMPORARY PAVING:

A minimum of 2” of cold or hot mix temporary asphalt shall be placed in finished trenches and rolled to a smooth surface at the end of each day unless final paving can be completed, or steel plates are used to cover trenches in paved streets. Traffic plates shall be subject to the requirements of 3.3 above. The temporary asphalt shall be placed within ¼” of finished pavement grade.

END OF SECTION

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SECTION 33 01 30.11 - INSPECTION OF SEWERS

PART 1 – GENERAL

1. 01 THE REQUIREMENT:

A. The Contractor shall furnish all labor, materials, tools, and equipment necessary to clean, perform testing, and provide for televising of completed sewer pipelines.

B. The Contractor shall call the Central San Inspection Office at least one business day in advance to arrange for an Inspector to be present for the preinstallation CCTV inspection.

C. The Contractor shall notify the Inspector at least one business day prior to any cleaning, testing, or televising work. All final testing and cleaning of sewer lines shall be done in the presence of the Inspector.

D. The Contractor shall complete cleaning and testing of sewer lines as required in this Section prior to requesting CCTV inspection.

E. No testing will be allowed until all utilities have been installed.

F. If deficiencies are identified during testing, the Contractor shall re-test after the deficiencies have been corrected.

1.02 REFERENCE SPECIFICATIONS, CODES AND STANDARDS:

A. Commercial Standards:

ASTM C 969: Standard Practice for Infiltration and Exfiltration Acceptance Testing of Installed Precast Concrete Pipe Sewer Lines

ASTM C 1091-03a: Test Method for Hydrostatic Infiltration Testing of Vitrified Clay Pipe Lines

AWWA C600-54T: Installation of Ductile-Iron Water Mains and Their Appurtenances

ASTM D 3034: Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings

ASTM F 679: Specification for Poly (Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings

PART 2 – PRODUCTS

2.01 MATERIAL REQUIREMENTS:

A. Mandrels, temporary plugs, low-pressure testing equipment and all other necessary materials shall be provided by the Contractor, subject to the Inspector's approval.

B. No materials shall be used which would be injurious to the public, personnel, adjacent improvements or the pipeline.

C. Air test gauges shall be laboratory-calibrated test gauges and shall be recalibrated by a certified laboratory prior to the leakage test. Gauge shall be easy to read in no more than 1 psi per increment and have a maximum full-scale range of 5 psi.

PART 3 – EXECUTION

3.01 GENERAL:

A. The Contractor shall clean pipelines by balling and flushing or hydroflushing prior to deflection and pressure testing.

B. The Contractor shall perform deflection and pressure tests after submittal of compaction reports demonstrating compliance with the backfill compaction requirements and before CCTV inspections.

C. Work shall meet or exceed the requirements of these Specifications unless applicable requirements of an agency having jurisdiction (including the terms and conditions of an encroachment permit issued by a city or county) are greater, in which case the greater requirements shall govern.

3.02 CLEANING:

A. After the pipeline installation has been completed to the satisfaction of Central San, the Contractor shall clean the pipe in the presence of the Inspector.

B. The Contractor shall clean all sewer installations, deemed necessary by the Inspector, with a cleaning ball or device in accordance with the device manufacturer's instructions or recommendations and flushed. Hydroflush-pressure shall be maintained below 2,000 psi. Traps with screens in accordance with DWG 21-08 shall be used to trap debris. The Contractor shall remove all debris from the manhole prior to removing the trap.

C. Release of water during and/or after cleaning and testing has been completed, shall be performed in a manner approved by the Inspector. The Contractor shall be responsible for the proper disposal of water released.

D. The Contractor shall perform an additional cleaning of the pipeline after the installation of final paving, top block, frames and covers, and after all other required inspections, if required by the Inspector due to a reasonable determination that additional debris may have accumulated in the pipeline after initial cleaning.

3.03 PIPELINE DEFLECTION TESTING:

PVC and HDPE pipe 8" in diameter or larger shall be tested for deflection, joint displacement, or other obstruction by passing a rigid mandrel through the pipe. Deflection shall be tested after submittal of daily compaction reports demonstrating compliance with, but prior to, permanent resurfacing. The mandrel shall be a full circle, rigid, non-adjustable, an odd-numbered leg (9 leg minimum), acceptable to the Inspector as to design and manufacturer. Mandrel size shall meet the minimum requirements set forth in ASTM D 3034 and ASTM F 679. The circular cross section of the mandrel shall have a diameter of at least 95% of the specified average inside diameter of the pipe and the minimum length of the circular portion of the mandrel shall be equal to the nominal diameter of the pipe. Where obstructions and excessive deflection encountered by the mandrel, the Contractor shall remove, replace and retest the deficient section. Re-rounding will not be allowed.

3.04 PIPELINE LEAKAGE TESTING:

A. Repaired pipelines shall be re-tested as follows:

Sewer Type/Size	Acceptable Tests
Gravity ≤ 16"	low-pressure air test or a water pressure test
Gravity > 16"	water pressure test only
Pressurized (force mains)	air-over-water pressure test at 120% of maximum design operating pressure, measured at the lowest point of the pipeline section being tested.

B. Air Testing

1. Each section of main sewer and its appurtenant connected laterals shall be tested between successive manholes by plugging and bracing all openings in the sewer lines. If any leaks are found, the air pressure shall be released, the leaks eliminated, and the test procedure started over again.

2. Air tests shall be conducted in accordance with the following procedure and the table below:

Pipe Diameter (in)	Length of Line (ft)	Length of test (minutes)
4 to 8	All	4
10	0 to 215	4
	> 215	5
12	0 to 155	4
	155 to 190	5
	> 190	6
15 & 16	0 to 120	5
	120 to 165	7
	> 165	8
>16	Hydrostatically test in accordance with Paragraph C	
Note: All tests shall be performed at 4 psi using a 5 lb gage.		

All necessary test equipment shall be in proper working order and tests shall be made in the presence of the Inspector. Test plugs shall be carefully placed at each end of the section of line to be tested. When all necessary test equipment is in place, a compressed air supply shall be attached to the air fitting on the test equipment and the air pressure within the line increased to 4 psi. After the air supply is securely turned off or disconnected, there shall be a 2-minute waiting period to allow stabilization of air within the sewer line before the actual test period begins. In no case shall the air pressure within the line be less than 3-1/2 psi at the beginning of the test period. The allowable air pressure loss shall not exceed 1 psi. When testing side sewers, or portions thereof, the test period shall be 4 minutes and the allowable loss shall not exceed 1 psi. After completion of a test, the air pressure shall be released slowly through the valve, which is incorporated in the test equipment. Air test plugs shall not be removed until the air pressure is no longer measurable.

C. New sewers larger than 16” diameter shall be hydrostatically tested in accordance with the following procedure:

1. After installation, all new trunk sewer pipelines shall be thoroughly cleaned prior to pressure testing. A section of trunk sewer shall be prepared for testing between two structures by plugging the inlet side of the discharge manhole and all openings in the upstream manhole except the discharge opening. All plugs shall be properly braced against the manhole wall to withstand the forces of the test in order to prevent loss in the event of a failure.

2. A section of the trunk sewer prepared as above shall be tested by filling it with water to an elevation 5 feet above the top of pipe at the upstream end of the test section, or 5 feet above the existing groundwater elevation, whichever is greater. The water shall be introduced into the test section at least one hour in advance of the test period and refilled as necessary prior to commencement of the test period to allow the pipe and joint material to become saturated. The loss in water may be determined by measuring the rate of fall of the water level, but the level shall not be allowed to fall more than one foot below the specified head during the test period.

3. For RCP, the pressure shall be maintained for not less than 4 hours and the leakage rate shall not exceed 200 gallons per inch of diameter per mile of pipe for 24 hours (ASTM C 969-02). For VCP, the pressure shall be maintained for not less than one hour and the leakage rate shall not exceed 200 gallons per inch diameter per mile for 24 hours (ASTM C 1091-03a). For DIP, the pressure shall be maintained for not less than one hour and the leakage rate shall not exceed 70 gallons per inch diameter per mile of pipe of 24 hours (AWWA C600-54T).

D. When leakage exceeds the amount allowed by the specifications, the Contractor shall locate the leaks, submit a repair procedure for the Inspector’s review, and make the necessary repairs.

3.05 MANHOLE TESTING:

A. Hydrostatic Testing: Central San may require hydrostatic testing for leakage after installation and prior to backfilling. Prior to hydrostatic testing, all manholes shall be visually inspected. All defects shall be repaired by the Contractor, with non-shrink grout, to the satisfaction of the Inspector. All pipes entering the manhole shall be sealed at a point outside the manhole walls to include testing of the pipe/manhole joints. Safety lines shall be secured to all plugs utilized. The manhole shall be filled with water to a level 2” below the top of the frame. After a period of at least one hour to allow the water level to stabilize, the manhole shall be refilled and the water level shall be checked. The water level shall again be checked after a period of 4 hours. If the water level drops by more

than 1”, the leakage shall be considered excessive, and the Contractor shall make necessary repairs and retest the manhole.

B. Vacuum Testing: As an alternative to manhole hydrostatic testing, the Inspector may allow the use of vacuum testing. A vacuum of 10” of mercury shall be drawn on the manhole, the valve on the vacuum line of the test hood closed and the vacuum pump shut off. The manhole shall be deemed to have passed the test if the vacuum drop is less than 1” of mercury during a one-minute test period.

3.06 CCTV INSPECTION:

A. Central San will perform a CCTV inspection of the sanitary sewer upon substantial completion of the work.

1. The Contractor shall coordinate with the Inspector to arrange for an acceptable time to conduct the inspection.

2. Defects discovered by the CCTV inspection shall be corrected and the line re-inspected at the Contractor’s cost.

3. If a portion of an entire job is to be CCTV inspected, a separate fee will be due as established by Central San. Inspection fees are payable prior to the date of the partial CCTV inspection.

4. The Contractor shall request CCTV inspection once the following have been completed:

a) Sewer pipelines are installed, backfilled, and compacted.

b) Structures are in place, channeling is complete, and pipelines are accessible from structures.

c) All other underground facilities, utility piping, and conduits in the vicinity are installed.

d) For street locations, placement of aggregate base has been completed.

e) Pipelines to be inspected have been cleaned and flushed.

f) Final pressure test has been completed.

g) Mandrel testing is complete.

B. The procedure outlined below will be repeated until all deficiencies observed by CCTV inspection have been corrected to the satisfaction of Central San.

1. The Contractor shall request Central San to schedule the CCTV inspection.

a) If Central San's CCTV crew arrives at the jobsite and the work is not ready or accessible, the Contractor will be billed the cancellation fee payable to Central San prior to the date of rescheduled CCTV inspection. The Contractor shall reschedule CCTV inspection as outlined above.

2. Central San will televise the job.

a) If no deficiencies are observed, the work will be considered satisfactory.

b) If deficiencies are observed, a recording will be made and defects serious enough to require correction will be identified by the Inspector who will provide written notification. If corrective work is indicated and viewing of the recording is desired, the Contractor shall contact the Inspector to set a time for the viewing. All corrective work will be subject to approval by Central San. Central San reserves the right to require cleaning and additional leak testing of the repaired pipeline. Those portions of the pipeline where deficiencies have been corrected shall be re-televised. Payment of re-television inspection fees shall be paid to Central San prior to the scheduled date of the inspection.

C. The following observations from CCTV inspections will require correction:

1. Low spot 0.0625 x diameter of pipe or greater (e.g., 0.5” for an 8” pipe).
2. Joint separations (3/4” or greater opening between pipe sections).
3. Cocked joints present in straight runs or on the inside of pipe curves.
4. Chips in pipe ends.
5. Cracked or damaged pipe.
6. Offset joints.
7. Infiltration.
8. Debris or other foreign objects.
9. Other obvious deficiencies.

D. CCTV inspection of the work and the correction of observed defects shall not relieve the Contractor of its responsibility for the warranty period.

END OF SECTION

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SECTION 33 05 13 - MANHOLES AND STRUCTURES

PART 1 – GENERAL

1. 01 THE REQUIREMENT:

The Contractor shall furnish and install manholes and structures, complete with precast manhole bases or cast-in-place (if approved during Plan Review), pipe connections, barrel and cone components, preformed joint sealant, grade rings, frames, covers and other appurtenances shown on the Plans or specified in this Section.

1.02 RELATED WORK SPECIFIED ELSEWHERE:

A. All Related Documents and Sections: Contractor to examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Those Documents and Sections include, but is not limited to, the following:

1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 General Requirements, apply to this Section.

2. All Specification Sections listed in the Table of Contents.

1.03 REFERENCE SPECIFICATIONS, CODES AND STANDARDS:

A. Commercial Standards:

ASTM C 150: Specification for Portland Cement

ASTM C 478: Specification for Precast Reinforced Manhole Sections

1.04 CONTRACTOR SUBMITTALS:

Upon request by Central San, the Contractor shall submit complete shop drawings for all precast manhole bases to Central San and shall receive favorable review prior to ordering the bases.

1.05 QUALITY ASSURANCE:

After installation, the Contractor shall demonstrate that all manholes have been properly installed, level, with tight joints, at the correct elevations and orientations and that the backfilling has been carried out in accordance with the Plans and these Specifications. Vacuum testing of manholes may be required at Central San's sole discretion.

PART 2 – PRODUCTS

2.01 MATERIALS:

A. Manhole bases may be either cast-in-place or precast. Channels and shelves shall conform to the requirements DWG 19-01 through 19-07. Manhole channels shall be shaped to form a smooth transition of uniform cross-section from inlet pipes to the outlet pipe, both horizontally and vertically.

B. Precast Concrete Components: Only components listed in the Approved Materials List shall be used in the construction of manholes.

1. Precast manhole bases, and barrel and cone sections shall be manufactured by a process that will produce dense homogeneous reinforced concrete of high quality in conformance with ASTM C 478. Cement shall be Type V Portland Cement as specified in ASTM C 150.

2. Precast manhole components shall be designed to support vertical AASHTO H-20 truck loading, plus the weight of soil above the cone section.

3. Pipe connections at precast bases shall be pipe bells of the size, material and class of inlet and outlet pipes, integrally cast into the base by the manufacturer.

4. The minimum wall thickness for barrel and cone sections (in inches) shall be calculated by dividing the nominal diameter of the barrel (in inches) by twelve (i.e., D/12).

5. Manhole throats shall be constructed of reinforced concrete grade rings.

C. Preformed plastic sealing gasket for sealing joints between the manhole base, barrel and cone sections shall be as listed in the Approved Materials List.

D. Non-shrink grout shall conform to the requirements *Section 03 60 00 – Grout.*

E. Castings for manhole frames and covers shall conform to the requirements of *Section 05 50 00 - Miscellaneous Metal Work.*

F. Primer and sealant tape for sealing exterior joints between precast components shall be as listed in the Approved Materials List.

G. Concrete for cast-in-place manhole and rodding inlet components (bases and top blocks) shall conform to *Section 03 30 00 - Cast-In-Place Concrete.*

2.02 TEMPORARY COVERS:

Temporary covers for new construction or reconstruction of manholes shall be fabricated as detailed in *DWG 19-12*.

2.03 TEMPORARY PLUGS:

Temporary plugs shall be of the mechanical expanding type. Pneumatic are not acceptable.

PART 3 – EXECUTION

3.01 GENERAL:

A. Work shall meet or exceed the requirements of these Specifications unless applicable requirements of an agency having jurisdiction (including the terms and conditions of an encroachment permit issued by a city or county) are greater, in which case the greater requirements shall govern.

B. An All-Weather Access Road as specified in this Section is required for access to all structures in off-road locations (e.g., easements).

3.02 INSTALLATION:

A. Temporary Plugs

1. Mechanical expanding-type temporary plugs shall be installed and removed, as specified below, in the presence of an Inspector. Plugs shall be secured by tethering with a ¼” nylon rope attached to the top of a wood 2’x4’ of sufficient length to extend from the shelf to a point in the throat within 6” of the underside of the cover.

a) When a manhole exists or a new manhole is constructed at the beginning of a new main extension, a temporary plug shall be installed at the inlet of the new pipe at the existing manhole or new manhole.

b) When a new main extension begins at an existing rodding inlet or stub, a temporary plug shall be installed on the outlet of the first manhole upstream from the beginning of the new main extension.

B. Cast-in-Place Manhole Bases

1. Cast-in-place manhole bases over existing sewers shall be poured against undisturbed native soil, which has been excavated to the dimensions shown on the Plans. For new sewer installations, the cast-in-place manhole base shall be poured over 6” Type 1 Backfill. See *DWG 19-01* through *19-08*. If the excavation extends beyond the dimensions shown on the Standard Drawings, the Contractor shall construct forms and pour the base to the specified dimensions.

2. If water or soft ground is encountered at the bottom of the excavation, a minimum lift of 9” of coarse-bedding material in a geotextile wrap shall be used as shown on *DWG 19-01.*

3. A joint forming ring shall be used to form a level joint groove in the manhole base while the concrete is fresh to receive the first precast barrel section. The metal forming ring may be removed as soon as the concrete has set sufficiently to eliminate any slump in the joint groove.

4. Manhole channels shall be shaped to form a smooth transition from inlet pipes to the outlet pipe, both horizontally and vertically.

C. Precast Manhole Bases (on all new main sewer extensions)

1. Precast manhole bases shall be placed to the lines and grades shown on the Plans as an integral part of the pipe laying operation on a minimum thickness of 6” of Type I Bedding and Backfill Material compacted to 95% relative compaction. Where soft ground or water is present, a minimum thickness of 9“ of Coarse Bedding Material in a wrap of geotextile, per the requirements of *Section 31 05 19 - Geosynthetics for Earthwork*, shall be placed below the course of Type I Bedding and Backfill Material.

2. Inlet and outlet pipe connections at precast bases shall be pipe bells cast into the base by the manufacturer.

3. All precast concrete manholes shall be installed in strict conformance with the manufacturer's written instructions on a well-compacted foundation.

D. Setting Precast Barrel and Cone Sections

1. All joint surfaces of precast manhole bases, barrel and cone sections shall be thoroughly cleaned and dried prior to setting, and shall be sealed with a preformed plastic sealing gasket listed in the Approved Materials List at each joint as follows:

a) Remove the paper wrapper from one side of the gasket, retaining the outside paper in place to protect the gasket and assure against stretching.

b) Place the plastic gasket strip in the joint, forming a continuous gasket around the entire circumference of the manhole joint.

c) Remove the paper wrapper from the exposed side of the gasket and place the next manhole component.

d) Care shall be taken in the handling of barrel and cone sections after the plastic gasket has been affixed to avoid displacing the gasket or contaminating the joint or gasket with dirt or other foreign material. Any displaced or soiled gaskets shall be removed and replaced.

e) Care shall be taken to properly align the manhole section with the previously set section before it is lowered into position.

f) During cold or wet weather, the joint surfaces shall be heated with hot air until ice, frost, and moisture are removed and surface to be primed is dry and warm. Hot air shall also be passed over plastic gasket strips immediately prior to attaching them to joint surfaces and immediately prior to setting the section.

E. Manhole frames and covers shall not be set to final grade until the pavement has been completed, unless otherwise approved by Central San. Precast concrete grade rings shall be installed as shown in the Standard Drawings. Paving around the manhole shall be in accordance with local jurisdiction requirements. Openings in manholes shall be protected from construction loads, debris and unauthorized entry.

F. When new piping is installed in existing structures, the Contractor shall accurately position core-drilled openings in the concrete as shown on the job Plans and Standard Drawings or otherwise directed by the Inspector. Openings shall be of sufficient size to permit a final alignment of pipelines and fittings without deflection of any part and to allow adequate space for satisfactory placement of mechanical seals or packing with non-shrink grout where the pipe passes through the wall to ensure the resulting structure is watertight. Before placing the non-shrink grout, concrete surfaces shall be sandblasted, thoroughly cleaned of sand and any other foreign matter, and coated with epoxy bonding compound. After connection of the new inlet pipe, the Contractor shall re-channel the inside of the existing manhole base to provide a smooth flow channel to the new exit pipe.

G. The throat shall be constructed using appropriately sized reinforced concrete grade rings to bring the manhole cover to finished grade surface. No plastic sealing gaskets shall be used for jointing grade or extension rings.

H. Manhole top blocks shall be poured against forms constructed to the specified dimensions shown on *DWG 19-01*.

I. All manholes located on slopes steeper than 3:1 (horizontal to vertical) in easement areas shall be constructed with a reinforced concrete, reinforced concrete masonry unit or interlocking masonry unit retaining wall as shown on *DWG 19-11*.

J. All manholes shall be tested in accordance with *Section 33 01 30.11 - Inspection of Sewers.*

K. Temporary covers shall be used during construction until permanent frames and covers are installed.

3.03 RECONSTRUCTION OF EXISTING STRUCTURES:

A. General

1. Reconstruction work on any particular structure shall be diligently prosecuted so as to be completed within 3 calendar days after work is begun on that particular structure. The Contractor shall provide continuous access for Central San maintenance forces to the structure at all times.

2. When removing existing structures, the Contractor shall take precautions to ensure that no foreign material enters the structure or the downstream system. Before any work is started, the base shall be covered with a plywood ("false bottom") as shown on *DWG 19-13*, and then the false bottom shall be covered with a drop cloth of heavy canvas. The drop cloth and false bottom shall be kept in place during the work to catch debris, and upon completion, shall be removed with the collected debris. No debris shall enter the downstream system or be allowed to remain in the manhole.

B. Structure Adjustments and Repairs

1. All workmanship and materials for structure adjustments shall conform to the requirements of these Specifications. In the case of existing brick or cast-in-place concrete structures, repair or adjustments shall be accomplished with materials in-kind or with precast elements as detailed on the Plans.

2. Existing structure precast elements, adjustment rings, frames, and covers removed for adjustments and/or repairs may be reinstalled only when such undamaged items are permitted by the Inspector for reuse.

3. Manhole adjustments shall be accomplished by one of the methods specified below or as shown on the Plans:

   a) Upward adjustments of manholes to finish grade surface may be accomplished with reinforced concrete grade rings, formed concrete and/or a single cast iron extension ring when the adjusted manhole throat will not exceed 12" in height. In no case shall multiple cast iron extension rings be used in adjustments. When adjustments are made that position the bottom of the cast iron manhole frame above the existing concrete top block, the top block shall be reconstructed in accordance with the requirements of *DWG 19-01* through *19-08*.

   b) Whenever upward adjustment of manholes would result in a completed manhole throat section exceeding 12" in height, the upper manhole section, including the top block and cone section, shall be removed and the adjustment shall be made by reconstructing the structure using manhole barrel and cone sections, grade rings and frames and covers in accordance with the requirements of these Specifications and *DWG 19-01* through *19-08*.

   c) Downward adjustments of manholes shall be accomplished by removal of existing grade or extension rings and cone and barrel sections as required, and reconstructing the structure using manhole barrel and cone sections, grade rings and frames and covers in accordance with the requirements of these Specifications and *DWG 19-01* through *19- 08*.

4. Rodding inlet adjustments shall be accomplished by one of the methods specified below or as detailed on the Plans:

   a) Upward adjustments of rodding inlets shall be accomplished with formed concrete or cast-iron extension rings where the extension will not exceed 8", including any previous adjustments. When adjustments are made that position the bottom of the cast iron frame above the existing concrete top block, the top

block shall be reconstructed in accordance with the requirements of these Specifications and *DWG 19-14*.

b) Upward adjustments of rodding inlets exceeding 8” shall be accomplished by removing the structure’s frame, cover, and top block, and reconstructing the structure in accordance with the requirements of these Specifications and DWG 19-14. Pipe used for such adjustments shall be as required for pipeline repair and shall be installed to extend the line and grade of the existing pipe.

c) Downward adjustments of rodding inlets shall be accomplished by removal and reconstructions of the entire upper section of the structure including the top block.

END OF SECTION

City of Ukiah
300 Seminary Av., Ukiah CA 95482

Hydrant Flow Test Report

Name: Corner of Clay/Main	
Address:	
Tested by: Robby Hulbert	**Date: 8/8/2023**
Requested By: Daniel Flores	**Time: 7:00 AM**
Location of test: Clay/Main	
Hydrant ID Number: 287	
Residual hydrant location: 506 Main St	
Flow hydrant(s) Location: SW Corner of Clay/Main	
Static pressure (residual hydrant): 100 psi Hydrant 288	
Residual pressure (residual hydrant): 96 psi	
Nozzle size (flow hydrant): 2 1/2	
Hydrant pressure (flow hydrant): 75 psi	
Projected hydrant flow: 1455 GPM	

Remarks and comments:

BID RESULTS - SPEC 25-04 REMODEL OF 501 SOUTH STATE STREET

BID OPENING: 2 PM, AUGUST 19, 2025

	BASE BID			DMR BUILDERS SANTA ROSA, CA		CUPPLES AND SONS CONSTRUCTION UKIAH, CA		ACGC EUREKA, CA		FRC WINDSOR, CA		MIDSTATE CONSTRUCTION PETALUMA, CA		KIRBY CONSTRUCTION SANTA ROSA, CA	
Item #	Description	UOM	QTY	Unit Price	Item Total	Unit Price	Item Total	Unit Price	Item Total	Unit Price	Item Total	Unit Price	Item Total	Unit Price	Item Total
1	Temporary Controls, Fencing & Signage	LS	1	$65,000.00	$65,000.00	$541,780.00	$541,780.00	$7,000.00	$7,000.00	$6,462.76	$6,462.76	$10,000.00	$10,000.00	$110,500.00	$110,500.00
2	Mobilization	LS	1	$15,000.00	$15,000.00	$2,500.00	$2,500.00	$20,000.00	$20,000.00	$20,580.08	$20,580.08	$10,000.00	$10,000.00	$75,900.00	$75,900.00
3	Div 02 - Demolition	LS	1	$55,000.00	$55,000.00	$82,005.00	$82,005.00	$42,000.00	$42,000.00	$94,212.55	$94,212.55	$184,000.00	$184,000.00	$86,700.00	$86,700.00
4	Div 03 - Concrete	LS	1	$147,205.00	$147,205.00	$65,330.00	$65,330.00	$121,000.00	$121,000.00	$205,628.89	$205,682.89	$250,000.00	$250,000.00	$152,000.00	$152,000.00
5	Div 05 - Metal Fabrications	LS	1	$44,759.00	$44,759.00	$19,350.00	$19,350.00	$56,000.00	$56,000.00	$58,975.76	$58,975.76	$110,000.00	$110,000.00	$88,500.00	$88,500.00
6	Div 06 - Wood	LS	1	$363,842.00	$363,842.00	$317,500.00	$317,500.00	$281,000.00	$281,000.00	$435,438.96	$435,438.96	$363,000.00	$363,000.00	$576,000.00	$576,000.00
7	Div 07 - Insulation & Waterproofing	LS	1	$54,879.00	$54,879.00	$55,682.00	$55,682.00	$16,000.00	$16,000.00	$147,097.84	$147,097.84	$144,000.00	$144,000.00	$100,500.00	$100,500.00
8	Div 08 - Doors & Windows	LS	1	$316,613.00	$316,613.00	$313,442.00	$313,442.00	$410,000.00	$410,000.00	$439,352.24	$439,352.24	$432,000.00	$432,000.00	$463,500.00	$463,500.00
9	Div 09 - Finishes	LS	1	$464,393.00	$464,393.00	$442,132.00	$442,132.00	$835,370.00	$835,370.00	$528,060.39	$528,060.39	$534,000.00	$534,000.00	$571,600.00	$571,600.00
10	Div 10 - Signage & Accessories	LS	1	$28,512.00	$28,512.00	$65,278.00	$65,278.00	$24,000.00	$24,000.00	$38,132.75	$38,132.75	$138,000.00	$138,000.00	$49,500.00	$49,500.00
11	Div 13 - Non-Structural Seismic Restraints	LS	1	$30,000.00	$30,000.00	$0.00	$0.00	$21,000.00	$21,000.00	$12,286.62	$12,286.62	$5,000.00	$5,000.00	$0.00	$0.00
12	Div 14 - Elevator	LS	1	$220,000.00	$220,000.00	$386,975.00	$386,975.00	$238,000.00	$238,000.00	$228,260.78	$228,260.78	$266,000.00	$266,000.00	$263,000.00	$263,000.00
13	Div 21 - Wet Pipe Sprinkler Systems	LS	1	$113,454.00	$113,454.00	$103,140.00	$103,140.00	$121,000.00	$121,000.00	$126,724.17	$126,724.17	$169,000.00	$169,000.00	$220,000.00	$220,000.00
15	Div 22 - Plumbing	LS	1	$217,754.00	$217,754.00	$155,640.00	$155,640.00	$146,000.00	$146,000.00	$147,175.25	$147,175.25	$209,000.00	$209,000.00	$159,000.00	$159,000.00
17	Div 23 - Mechanical	LS	1	$200,000.00	$200,000.00	$199,990.00	$199,990.00	$218,000.00	$218,000.00	$245,720.06	$245,720.06	$266,000.00	$266,000.00	$260,000.00	$260,000.00
21	Div 26 - Electrical	LS	1	$990,000.00	$990,000.00	$735,000.00	$735,000.00	$973,000.00	$973,000.00	$1,111,460.94	$1,111,460.94	$786,000.00	$786,000.00	$1,018,800.00	$1,018,800.00
~~22~~	~~Div 28 - Access Control~~	LS	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
23	Div 31 - Earthwork	LS	1	$51,194.00	$51,194.00	$57,875.00	$57,875.00	$32,000.00	$32,000.00	$53,465.22	$53,465.22	$218,000.00	$218,000.00	$110,000.00	$110,000.00
24	Div 32 - Site Improvements	LS	1	$34,125.00	$34,125.00	$109,468.00	$109,468.00	$161,000.00	$161,000.00	$29,672.18	$29,672.18	$30,000.00	$30,000.00	$38,000.00	$38,000.00
25	Div 33 - Sanitary Sewer	LS	1	$76,120.00	$76,120.00	$77,845.00	$77,845.00	$9,000.00	$9,000.00	$85,023.39	$85,023.39	$15,000.00	$15,000.00	$36,500.00	$36,500.00
		TOTAL BASE BID:		**$3,487,850.00**		**$3,730,932.00**		**$3,731,370.00**		**$4,013,784.83**		**$4,139,000.00**		**$4,380,000.00**	
	Bid Alternate														
Item #	Description	UOM	QTY	Unit Price	Item Total	Unit Price	Item Total	Unit Price	Item Total	Unit Price	Item Total	Unit Price	Item Total	Unit Price	Item Total
1	New Transformer - including Demo of Existing Transformer & Site Work	LS	1	$250,000.00	$250,000.00	$50,000.00	$50,000.00	$51,000.00	$51,000.00	$58,486.22	$58,486.22	$68,000.00	$68,000.00	$250,000.00	$250,000.00
		TOTAL BID:		**$3,737,850.00**		**$3,780,932.00**		**$3,782,370.00**		**$4,072,271.05**		**$4,207,000.00**		**$4,630,000.00**	
				Sub:	Work:	Sub:	Work:	Sub:	Work:	Sub:	Work:	Sub:	Work:	Sub:	Work:
				NORTH COUNTIES DRYWALL	DRYWALL	ALCAL SPEACIALTY CONTRACTING	FOLDING GLASS PARTITIONS	SONOMA ELECTRIC	ELECTRICAL	PARC ENVIRONMENTAL	DEMOLITION	ASBESTOS MANAGEMENT OF CA	SELECTIVE DEMOLITION AND SAWCUTTING	AGD GENERAL ENG	HEAVY CIVIL AND CONCRETE
				NORTH COSAT FABRICATORS	GUARD + HAND RAILS	AMERICAN SHEET METAL PARTITION CO	PARTITIONS/ACCESSORIES	JMS MECHANICAL	HVAC	AGD GENERAL ENGINEERING	CONCRETE	PETERS EXCAVATING	GRADING, PAVING AND UTILITIES	PETERSEN BUILDERS	WOOD FRAMING
				CEILNG EXPERTS	ACOUSTICAL	B&L GLASS	STOREFRONT AND GLAZING	COLEMAN PLUMBING	PLUMBING	WELLANDER STEEL BUILT	STEEL FRAMING	ELITE CONCRETE	CONCRETE AND REBAR	NORTH COUNTIES DRYWALL	DRYWALL
				BNT TILE	TILE	DT FABRICATION	RAILINGS	CORTLAND ROOFING	ROOFING	JR STEPHENS	INTERIOR ARCHITECTURAL WOODOWRK	LHL CONSTRUCTION	STRUCTURAL AMD MISC STEEL	SONOMA MARIN	ELECTRICAL
				ELLIS FLOORING	FLOORING	DUNN RIGHT PAINT	PAINTING	PROGRESS GLASS CO	STOREFRONT	COAST BUILDING PRODUCTS	BUILDING INSULATION	TORRES BROTHERS	ROUGH CARPENTRY	JMS	HVAC
				OTIS	ELEVATOR	JMS MECHANICAL	MECHANICAL	ELLIS FLOORING	FLOORING	SOLANO COUNTY ROOFING	ROOFING	REDHAWK GLASS	GLAZING, WINDOWS	COLEMAN	PLUMBING
				AGD	CONCRETE + SITEWORK	MENDOCINO STRIPING	STRIPING	BNT TILE	TILING	REDHAWK GLASS	ENTANCES & STOREFRONTS	NORTH COUNTIES DRYWALL	DRYWALL AND METAL STUDS	APPLIED FINISHES	PAINTING
				WIPF	FIRE SPRINKLER	NORTH COUNTIES DRYWALL	DRYWALL	JR STEPHENS	CASEWORK	NORTH COUNTIES DRYWALL	GYPSUM BOARD	BNT TILE	CERAMIC TILE	GLASS N SASH	GLAZING
				RG PLUMBING	PLUMBING	PACIFIC COAST CUTTERS	CONCRETE CUTTING	CEILING EXPERTS	ACOUSTICAL CEILINGS	BNT TILE	PORCELAIN TILE	DS BAXLEY	FLOORING	DSB	FLOORING
				CORE ELECTRIC	ELECTRICAL	SOLANO COUNTY ROOFING	ROOFING	EG PAVING CONSTRUCTION	SITE CONCRETE, SITE WORK, UNDERGROUND UTILITIES	NORTH BAY ACOUSTICS	ACOUSTICAL CEILINGS	JASON MANUEL CAMBRA DBA MIKE'S PAINTING	PAINTING	BNT	CERMIC TILE
				JR STEPHENS	CASEWORK	ULTRA CEILINGS	ACOUSTICAL PANELS	NORTH COUNTIES DRYWALL	DRYWALL	BT MANCINI	RESILIENT FLOORING	CEILING EXPERTS	ACOUSTICAL	TK ELEVATOR	ELEVATOR
				TOP NOTCH	HVAC	VALLEY PAVING	PAVING	WIPF CONSTRUCTION	FIRE SPRINKLERS	APPLIED FINISHES	PAINTING	SCHINDLER ELEVATOR	HYDRAULIC ELEVATOR	WIPF	FIRE SPRINKLER
				REDHAWK GLASS	GLAZING	WIPF CONSTRUCTION	UNDERGROUND/FIRE SPRINKLERS	TK ELEVATOR	ELEVATORS	SCHINDLER	HYDRAULIC ELEVATOR	GROFF PLUMBING	PLUMBING	COAST BLDG PRODUCTS	INSULATION
						WM LINN ELECTRICAL CTING	ELECTRICAL	APPLIED FINISHES	PAINTING	WIPF CONSTRUCTION	FIRE SUPPRESSION	WIPF CONSTRUCTION	FIRE SPRINKLERS	CORTLAND	ROOFING
						BNT TILE	TILE	LNS WELDING & FABRICATION	METAL FABRICATIONS	COLEMAN PLUMBING	PLUMBING	JMS MECHANICAL	HVAC	AHLBORN	STEEL
						UNIVERSAL FLOORING	FLOORING			JMS MECHANICAL	HVAC	STAGGS CONSTRUCTION	ELECTRICAL	JR STEPHENS	CABS AND COUNTERS
						NATIONWIDE LIFTS	ELEVATOR			O'ROURKE ELETRIC	ELECTRICAL	CORTLAND ROOFING	ROOFING	CEILING EXPERTS	ACOUSTICAL CEILING
										AGD GENERAL ENGINEERING	EARTHWORK				
										PACIFIC COAST CUTTERS	HARD DEMO				

Cupples and Sons Construction Inc.
221 Olive Lane, Suite G
Ukiah, CA 95482
707-972-7331
caseyc@cupplesandsons.com

August 22, 2025

Via Email Only

City of Ukiah
Department of Community Development
300 Seminary Avenue
Ukiah, California 95482

Attn:
Myles Fisette- mfisette@cityofukiah.com
Kristine Lawler- cityclerk@cityofukiah.com

Subject: Protest of Bid
Project: Remodel of 501 South State Street

To whom it may concern,

This letter is to formally protest the bid submitted by the apparent low bidder, DMR Builders for the project referenced above. DMR Builders has submitted a bid that is non-responsive and should be rejected pursuant to California law, including the Subletting and Subcontracting Fair Practices Act (Public Contract Code §§ 4100–4114). Specifically:

1. **Failure to List Required Subcontractors**
   The bid form required the listing of subcontractors for all portions of work exceeding one-half of one percent (0.5%) Roofing and painting both clearly fall within this statutory requirement and DMR Builders failed to list any subcontractor for either roofing or painting. These trades represent significant scopes of work that exceed the statutory threshold. In addition, upon investigation of past projects and clients, DMR Builders does not appear to self-perform either the roofing or painting scope of work.
2. **Violation of Public Contract Code § 4104**
   Section 4104 mandates that bidders disclose the name and location of subcontractors who will perform more than the stated thresholds. By failing to identify subcontractors for roofing and painting, DMR Builders has violated this requirement. This omission prevents the City of Ukiah from properly evaluating subcontractor responsibility, prevailing wage compliance, and overall project readiness. It also could undermine fair competition by allowing the bidder to "bid shop" or "bid peddle" after bid opening.

For the reasons stated above, we respectfully request that the City reject the apparent low bidder's bid as non-responsive and award the contract to the lowest responsive and responsible bidder, which is Cupples & Sons Construction Inc.

Thank you for your prompt attention to this matter. Please confirm receipt of this protest.

Sincerely,

Casey Cupples
Vice-President
Cupples and Sons Construction Inc.

c.c.
DMR Builders- info@dmrbuilderscorp.com

DMR BUILDERS

Attn:
Myles Fisette- mfisette@cityofukiah.com
Kristine Lawler- cityclerk@cityofukiah.com

City of Ukiah
Department of Community Development
300 Seminary Avenue
Ukiah, California 95482

Re: Bid Protest

Dated: 8/25/2025

Subject: Response to Bid Protest for Remodel of 501 South State Street

Dear Myles Fisette,

We are in receipt of Cupples and Sons Construction Inc. Bid Protest, dated August 22, 2025, for the Remodel of 501 South State Street Project that formally bid on 08/19/25 at 2:00pm.

Cupples and Sons Construction Inc. is contending that DMR Builders' bid proposal is invalid due to not listing a subcontractor for painting or roofing.

DMR Builders will self-perform the painting for this project.
DMR Builders will be using subcontractor, Cortlandt Roofing for the TPO roof system and roof patching who was not listed as the roofing proposal was below .5% at $15,578.00 which makes the total percentage .44% of our bid total.

After review of Cupples and Sons protest, the facts prove there is no ground to substantiate any claim and that their bid protest should be rejected.

As evidenced, DMR Builders has thoroughly examined the project plans and specs and have submitted a complete and responsive bid package. Thus, the project should be awarded to the lowest responsive bidder, DMR Builders.

Respectfully,

Godemar Da Silva Jr, **President**

DMR BUILDERS
707.596.7575
415.521.6906

CORTLANDT
ROOFING & WATERPROOFING
CA Lic. #922894

8/18/2025

Proposal

Proposal submitted to:
DMR Builders
info@dmrbuilderscorp.com
707-596-7575

Work to be performed at:
501 South State Street
Ukiah, CA
95482

We hereby propose to furnish the materials and perform the labor necessary of:

Cortlandt Roofing will provide and install the necessary materials to patch the existing roof around the newly framed 'Penthouse'. This includes rigid insulation, ½" coverboard, and single membrane roofing. We will also patch around one (1) removed condenser unit.

On the new 'Penthouse' roof, we will supply and install a 60 mil. TPO roofing membrane, over ½" cover board, over tapered insulation. TPO compatible flashing will be used at the perimeter.

We will provide and install Box Rib metal panels on 'Penthouse walls, over 2" rigid insulation, including appurtenant flashings and cleats.

Note: An alternate price to demo of the existing roof is included in this proposal. It can be removed if you choose to have the framers do the demo.

Addendums 1-4 are acknowledged.

Cortlandt Roofing will haul away all roofing debris from the jobsite.

TPO roof system and roof patching: $15,578.00
Box rib metal panel system on penthouse walls: $9,762.00
Demo existing roof to facilitate penthouse structure: $2,975.00

All material is guaranteed to be as specified, and the above work to be performed in accordance with the drawings and specifications submitted for above work and completed in a workmanlike manner for the sum of **$ABOVE** Dollars, with payments to be made according to the payment schedule on page three of this proposal.

CORTLANDT
ROOFING & WATERPROOFING
CA Lic. #922894

"Notice To Owner"
(Section 7018.5 – Contractors License Law)

Under the Mechanics Lien Law, any Contractor, Subcontractor, Laborer, Materialman or other person who helps to improve your property and is not paid for his labor, services or material, has the right to enforce his claim against your property.

Under the law, you may protect yourself against such claims by filing, before improvement or modification thereof, in the office of the county recorder of the county where the property is situated and requiring that a contractor's payment bond be recorded in such office. Said bond shall be in an amount not less than fifty percent (50%) of the contract price and shall, in addition to any conditions for the performance of the contract, be conditioned for the payments in full of the claims of all persons furnishing labor, services, equipment or materials for the work described in said contract.

LIMITATIONS.

The parties herein agree that any statute of limitations period applicable to the enforcement or breach of this Agreement, shall be shortened to the term of one year. In any action, arbitration or other legal action allowed by law, either party, under the terms of this Agreement, shall be limited to initiating such action or proceeding no later than one year from the date of any breach or other wrong recognized by law. Regardless of any other limitation period allowing for a greater time period including any statutory or California case authority which would allow extended time periods recognized by law.

CORTLANDT
ROOFING & WATERPROOFING
CA Lic. #922894

Proposal Submitted to: DMR Builders

Any alterations or deviation from this proposal involving extra costs, will be executed only upon written orders signed by the owner, and will become an extra charge over and above the estimate contained in this proposal. All agreements shall be contingent upon strikes, accidents or delays beyond our control. Owner to carry fire, tornado and other necessary insurance upon above work. Workman's compensation and Public Liability Insurance coverage on above work to be taken out by Cortlandt Roofing.

Respectfully Submitted: _____

Cortlandt Roofing, Inc.
State License #922894

NOTE: THIS PROPOSAL MAY BE WITHDRAWN BY CORTLANDT ROOFING, IF NOT ACCEPTED WITHIN 30 DAYS

PAYMENT SCHEDULE

1. Deposit at time of acceptance of proposal: **$ 0.00**
2. Payment at time of delivery of materials: **$ 55%**
3. **Balance due upon completion:** **$ 45%**

WORK AUTHORIZATION FOR PAYMENT OF THIS INVOICE

Authorization to proceed with proposed work: I, the undersigned, am owner/authorized representative/tenant of the premises at which the materials and work, indicated herein, are to be performed. I hereby authorize Cortlandt Roofing to perform said work according to the specifications contained herein.
A monthly service charge of 1.5% of the amount due will be added after ten days. I agree to pay reasonable attorney's fees and court costs in the event of legal action or reasonable bank costs if my check fails to clear. I have read, agree to, and have received a copy of this contract.

ACCEPTANCE OF PROPOSAL

The above prices, specifications and conditions are satisfactory and are hereby accepted. You are authorized to do the work as specified. Payment will be made as outlined above.

_____ _____
Signature Signature
Date: _____ Date: _____

Contractors are required by law to be licensed and regulated by the Contractors State License Board. Any questions concerning a contractor may be referred to the Registrar, Contractor State License Board [9835 Goethe Road Sacramento, California] Mailing Address [PO Box 26000 Sacramento, California 95827].

Outlook

Fw: DMR Response RE: Bid Protest- 501 South State Street

From Myles Fisette <mfisette@cityofukiah.com>
Date Wed 9/3/2025 8:02 PM
To CityClerk <cityclerk@cityofukiah.com>; Mari Rodin <mrodin@cityofukiah.com>; Susan Sher <Ssher@cityofukiah.com>; Doug Crane <dcrane@cityofukiah.com>; Juan Orozco <jorozco@cityofukiah.com>

Email fron DMR Builders confirming self perform work on demo and installation of box rib panels from sub contractor proposal.

Myles Fisette, Purchasing Manager
Procurement | Capital | Grants | Special Projects
411 West Clay Street, Ukiah, CA 95482
(707)463-6225, mfisette@cityofukiah.com

From: DMR Builders <info@dmrbuilderscorp.com>
Sent: Wednesday, August 27, 2025 8:52:09 AM
To: Myles Fisette <mfisette@cityofukiah.com>; J.R <jdasilva@dmrbuilderscorp.com>; Katja Da Silva <kdasilva@dmrbuilderscorp.com>
Subject: RE: DMR Response RE: Bid Protest- 501 South State Street

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Good morning, Myles

DMR Builders will be self-performing the installation of the box rib panels and the demolition of the existing roofing. DMR Builders will hire Cortland roofing to only perform the TPO roofing patch work.

Respectfully,
DMR Builders
O.707-596-7575
info@dmrbuilderscorp.com

DMR BUILDERS

2725 Guerneville Rd Santa Rosa Ca 95401

From: Myles Fisette <mfisette@cityofukiah.com>
Sent: Wednesday, August 27, 2025 7:15 AM
To: DMR Builders <info@dmrbuilderscorp.com>
Subject: RE: DMR Response RE: Bid Protest- 501 South State Street

Hi Katja,
I see the estimate for the roofing but there is an additional $12,737 of work listed here. Can I confirm whether DNR Builders plans to hire Courtlandt Roofing for that work as well. Thanks.

City of Ukiah
Myles Fisette, Purchasing Manager
411 West Clay Street, Ukiah, CA 95482
(707) 463-6225, mfisette@cityofukiah.com

From: DMR Builders <info@dmrbuilderscorp.com>
Sent: Tuesday, August 26, 2025 2:22 PM
To: Myles Fisette <mfisette@cityofukiah.com>
Subject: RE: DMR Response RE: Bid Protest- 501 South State Street

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Hi Myles,

Please see attached proposal from Cortlandt Roofing.

Respectfully,
Katja
DMR Builders
O.707-596-7575

info@dmrbuilderscorp.com

2725 Guerneville Rd Santa Rosa Ca 95401

From: Myles Fisette <mfisette@cityofukiah.com>
Sent: Tuesday, August 26, 2025 1:12 PM
To: DMR Builders <info@dmrbuilderscorp.com>
Subject: RE: DMR Response RE: Bid Protest- 501 South State Street

Hi Katja,

Are you able to provide me with the proposal from Cortlandt Roofing to include as part of our recommendation to our City Council?

Myles Fisette, Purchasing Manager
411 West Clay Street, Ukiah, CA 95482
(707) 463-6225, mfisette@cityofukiah.com

From: DMR Builders <info@dmrbuilderscorp.com>
Sent: Monday, August 25, 2025 10:33 AM
To: Myles Fisette <mfisette@cityofukiah.com>
Cc: Kristine Lawler <klawler@cityofukiah.com>; CityClerk <cityclerk@cityofukiah.com>; Casey Cupples <caseyc@cupplesandsons.com>; J.R <jdasilva@dmrbuilderscorp.com>
Subject: DMR Response RE: Bid Protest- 501 South State Street

[EXTERNAL EMAIL] DO NOT CLICK links or attachments unless you recognize the sender and know the content is safe.

Good morning,

Please see attached- DMR Builders' response to Cupples and Sons Construction's bid protest for the 501 South State St Project.

Respectfully,
Katja
DMR Builders
O.707-596-7575
info@dmrbuilderscorp.com

<image002.png>

2725 Guerneville Rd Santa Rosa Ca 95401

From: Casey Cupples <caseyc@cupplesandsons.com>
Sent: Friday, August 22, 2025 4:53 PM
To: Myles Fisette <mfisette@cityofukiah.com>
Cc: klawler@cityofukiah.com; cityclerk@cityofukiah.com; DMR Builders <info@dmrbuilderscorp.com>
Subject: Bid Protest- 501 South State Street

Good Afternoon,

Attached please find Cupples and Sons Construction's formal bid protest of the apparent low bidder, DMR Builders, for the remodel of 501 South State Street project.

Please let me know if you need anything else.

Casey

Casey Cupples
Vice President
e. caseyc@cupplesandsons.com
p. 707-972-7331

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Agenda Item No: 14.b.

MEETING DATE/TIME: 9/3/2025

ITEM NO: 2025-949

City of Ukiah

AGENDA SUMMARY REPORT

SUBJECT: Receive Updates on City Council Committee and Ad Hoc Assignments, and, if Necessary, Consider Modifications to Assignments and/or the Creation/Elimination of Ad Hoc(s).

DEPARTMENT: City Clerk

PREPARED BY: Kristine Lawler, City Clerk

PRESENTER: Mayor Crane and Various Councilmembers

ATTACHMENTS:

1. 2025 City Council Special Assignments and Ad Hocs

Summary: City Council members will provide reports and updates on their committee and ad hoc assignments. If necessary, the Council may consider modifications.

Background: City Council members are assigned to a number of committees and ad hoc activities. These assignments are included as Attachment 1.

Discussion: Previously, the City Council discussed having more time allocated to reporting on committee and ad hoc activities. Often, the Council Reports section of the regular agenda is rushed due to impending business (i.e., public hearings), and not enough time is afforded for reports beyond community activities.

In an effort to foster regular updates on committee and ad hoc assignments, this item is being placed on the agenda to provide the City Council members an expanded opportunity to report on assignments and modify assignments as necessary.

Recommended Action: Receive report(s). The Council will consider modifications to committee and ad hoc assignments along with the creation/elimination ad hoc(s).

BUDGET AMENDMENT REQUIRED: N/A

CURRENT BUDGET AMOUNT: N/A

PROPOSED BUDGET AMOUNT: N/A

FINANCING SOURCE: N/A

REVENUE: No **GRANT:** No

PREVIOUS CONTRACT/PURCHASE ORDER NO.: N/A

COORDINATED WITH: N/A

STRATEGIC PLAN (SP): N/A

CLIMATE INITIATIVES (CI): N/A

GENERAL PLAN ELEMENTS (GP): N/A

Approved: Sage Sangiacomo, City Manager

LOCAL / UKIAH VALLEY	MTG DATE/TIME	MEETING LOCATION	MAILING ADDRESS/CONTACT	COMMITTEE FUNCTION	ASSIGNED TO	PRINCIPAL STAFF SUPPORT
City Broadband Project	TBD	TBD	Civic Center 300 Seminary Ave. Ukiah, CA 95482	to evaluate the Request for Proposal (RFP) for the Internet Service Provider (ISP) for the California's Public Utilities Commission (CPUC) Last Mile Broadband	**Orozco**	**Jim Robbins,** Grants Manager, 463-6708; jrobbins@cityofukiah.com
Investment Oversight Committee	Varies	Civic Center 300 Seminary Ave. Ukiah, CA 95482	Civic Center 300 Seminary Ave. Ukiah, CA 95482	Reviews City investments, policies, and strategies	**Crane** **Orozco - Alternate** **Alan Carter,** Treasurer	**Dan Buffalo,** Director of Finance; 463-6220 dbuffalo@cityofukiah.com
Disaster Council	Shall meet a minimum of once a year at a time and place designated upon call of the chair	Place designated upon call of the chair or, if she/he is unavailable or unable to call such meeting, the first vice chair and then the City Manager or her/his designee.	Office of Emergency Management 300 Seminary Ave. Ukiah, CA 95482 467-5720 - Traci Boyl	Develop any necessary emergency and mutual aid plans, agreements, ordinances, resolutions, rules, and regulations.	**Orozco** **Criss - Alternate**	**Traci Boyl,** City Manager's Office Management Analyst; 467-5720; tboyl@cityofukiah.com
Greater Ukiah Business & Tourism Alliance (GUPTA)	4th Monday of month, 10 a.m.	200 S School St. Ukiah, CA 95482	200 S School St. Ukiah, CA 95482	Promotes tourism and works to strengthen and promote the historic downtown and businesses within the greater Ukiah area	**Marianne Davison -** *Community Services Department Staff* **Orozco - Alternate**	**Shannon Riley,** Deputy City Manager; 467-5793 sriley@cityofukiah.com
Mendocino County Inland Water and Power Commission (IWPC)	2nd Thursday of month, 6:00 p.m.	Civic Center 300 Seminary Avenue conference room 5	IWPC Staff P.O. Box 1247 Ukiah, CA 95482 391-7574 - Candace Horsley	Develops coordination for water resources and current water rights: Potter Valley project - Eel River Diversion	**Rodin** **Orozco - Alternate**	**Sean White,** Director of Water Resources; 463-5712 swhite@cityofukiah.com
North Coast Opportunities (NCO)	4th Wednesday of month, 2 p.m.	Alternating locations - Ukiah and Lakeport	Governing Board Chair North Coast Opportunities 413 North State Street Ukiah, CA 95482	Assist low income and disadvantaged people to become self reliant	**Neil Davis**	Neil Davis, Community Services Director; 467-5764 ndavis@cityofukiah.com
Sun House Guild ex officio	2nd Tuesday of month, 4:30 p.m.	Sun House 431 S. Main St. Ukiah, CA	431 S. Main Street Ukiah, CA 95482 467-2836	Support and expand Grace Hudson Museum	**Orozco, Sher** **Neil Davis - Alternate**	**David Burton**, Museum Director; 467-2836 dburton@cityofukiah.com
Ukiah Valley Basin Groundwater Sustainability Agency (GSA)	2nd Thursday of month, 1:30 p.m.	Board of Supervisors Chambers; 501 Low Gap Road Ukiah, CA	County Executive Office 501 Low Gap Rd., Rm. 1010 Ukiah, CA 95482 463-4441	GSA serves as the Groundwater Sustainability Agency in the Ukiah Valley basin	**Crane** **N/A - Alternate**	**Sean White,** Director of Water Resources; 463-5712 swhite@cityofukiah.com

MENDOCINO COUNTY	MTG DATE/TIME	MEETING LOCATION	MAILING ADDRESS/CONTACT	COMMITTEE FUNCTION	ASSIGNED TO	PRINCIPAL STAFF SUPPORT
City Selection Committee	Called as required by the Clerk of the Board	BOS Conference Room 501 Low Gap Rd. Rm. 1090 Ukiah, CA	C/O: BOS 501 Low Gap Rd., Rm 1090 Ukiah, CA 95482 463-4441	Makes appointments to LAFCO and Airport Land Use Commission *(Mayor - Primary; Vice Mayor - Alternate)*	**Mayor Crane** **Vice Mayor Sher**	**Kristine Lawler,** City Clerk; 463-6217 klawler@cityofukiah.com
Economic Development & Financing Corporation (EDFC)	2nd Thursday of month, 2:00 p.m.	Primarily 631 S. Orchard Street (location varies)	Executive Director 631 South Orchard Avenue Ukiah, CA 95482 467-5953	Multi-agency co-op for economic development and business loan program	**Riley** (appointed 12/19/18)	**Shannon Riley,** Deputy City Manager; 467-5793 sriley@cityofukiah.com
Library Advisory Board	3rd Wednesdays of alternate months; 1:00 p.m.	Various Mendocino County Libraries	Ukiah County Library 463-4491	Review library policy and activities	**Sher** **Rodin - Alternate**	**Kristine Lawler,** City Clerk; 463-6217; klawler@cityofukiah.com
Mendocino County 1st District Liaison	Monthly; TBD	Civic Center Annex conference room #5 411 West Clay St. Ukiah, CA 95482	Civic Center 300 Seminary Ave. Ukiah, CA 95482	To coordinate activities and policy development with the City's 1st District Supervisor	**Crane** **Rodin - Alternate**	**Sage Sangiacomo,** City Manager; 463-6221; ssangiacomo@cityofukiah.com
Mendocino County 2nd District Liaison	1st Wednesdays of month, 8:00 a.m.	Civic Center Annex conference room #5 411 West Clay St. Ukiah, CA 95482	Civic Center 300 Seminary Ave. Ukiah, CA 95482	To coordinate activities and policy development with the County's 2nd District Supervisor	**Criss** **Rodin - Alternate**	**Shannon Riley,** Deputy City Manager; 467-5793 sriley@cityofukiah.com
Mendocino Council of Governments (MCOG)	1st Monday of month, 1:30 p.m.	Board of Supervisors Chambers 501 Low Gap Road Ukiah, CA	Executive Director 367 N. State Street, Ste. 206 Ukiah, CA 95482 463-1859	Plan and allocate State funding, transportation, infrastructure and project County wide	**Criss** **Sher - Alternate**	**Tim Eriksen,** Public Works Director/City Engineer; 463-6280 teriksen@cityofukiah.com **Craig Schlatter,** Community Development Director; 463-6219; cschlatter@cityofukiah.com
Mendocino County Airport Land Use Commission	As needed	BOS Conference Room 501 Low Gap Rd., Rm. 1090, Ukiah, CA	Mendocino County Executive Office 501 Low Gap Rd. Rm. 1010 Ukiah, CA 95482	To formulate a land use compatibility plan, provide for the orderly growth of the airport and the surrounding area, and safeguard the general welfare of the inhabitants within the vicinity	**Liaisons: Owen/Schlatter**	**Greg Owen**, Airport Manager; 467-2855; gowen@cityofukiah.com **Craig Schlatter**, Director of Community Development; 463-6219; cschlatter@cityofukiah.com
Mendocino County Local Area Formation Commission (LAFCO)	1st Monday of month, 9:00 a.m.	Board of Supervisors Chambers	Executive Director 200 S. School Street, Ste. 2 Ukiah, CA 95482 463-4470	Required by legislation - planning spheres of influence, annexation, service areas, and special districts	**Rodin** **Crane** - Alternate for both city seat members on Commission	**Craig Schlatter,** Director of Community Development; 463-6219; cschlatter@cityofukiah.com

MENDOCINO COUNTY Continued	MTG DATE/TIME	MEETING LOCATION	MAILING ADDRESS/CONTACT	COMMITTEE FUNCTION	ASSIGNED TO	PRINCIPAL STAFF SUPPORT
Mendocino Solid Waste Management Authority (MSWMA)	3rd Thursday of every other month (varies), 10:00 a.m.	Willits Council Chambers	Solid Waste Director 3200 Taylor Drive Ukiah, CA 95482 468-9710	County-wide Solid Waste JPA	**Crane** **Sher - Alternate**	**Tim Eriksen,** Public Works Director/City Engineer; 463-6280 teriksen@cityofukiah.com
Mendocino Transit Authority (MTA) Board of Directors	Last Wednesday of month, 1:30 p.m.	Alternating locations - Ukiah Conference Center or Fort Bragg, or Point Arena	Executive Director 241 Plant Road Ukiah, CA 95482 462-1422	County-wide bus transportation issues and funding	**Sher** **Rodin - Alternate**	**Tim Eriksen, Public Works Director/City Engineer;** 463-6280 teriksen@cityofukiah.com
Mendocino Youth Project JPA Board of Directors	3rd Wednesday of month, 7:45 a.m.	776 S. State Street Conference Room	Mendocino Co. Youth Project 776 S. State Street, Ste. 107 Ukiah, CA 95482 707-463-4915	Targets all youth with a focus on drug and alcohol prevention, healthy alternatives and empowering youth to make healthy choices	**Criss** **Max Brazill, Admin Lieutenant - Alternate**	**Tom Corning**, Police Chief; 463-6254; tcorning@cityofukiah.com
Russian River Flood Control District (RRFCD) Liaison	1st Monday of month, 5:30 p.m.	151 Laws Ave.,Suite D Ukiah, CA	151 Laws Ave., Ukiah, CA 95482; rrfc@pacific.net; 462-5278	Proactively manage the water resources of the upper Russian River for the benefit of the people and environment of Mendocino County	**White/Orozco**	**Sean White,** Director of Water Resources; 463-5712 swhite@cityofukiah.com
Ukiah Players Theater Board of Directors	3rd Tuesday of month, 6:00 p.m	1041 Low Gap Rd Ukiah, CA 95482 462-1210	1041 Low Gap Rd Ukiah, CA 95482 462-1210	To oversee the activities, organization and purpose of the Ukiah Players Theater	**Greg Owen,** Airport Manager (appointed 12/19/18)	**Kristine Lawler,** City Clerk; 463-6217 klawler@cityofukiah.com
Ukiah Unified School District (UUSD) Committee	Quarterly	511 S. Orchard, Ste. D Ukiah, CA 95482	511 S. Orchard Ukiah, CA 95482	Information exchange with UUSD Board Chair, Mayor, Superintendent, and City Manager	**Orozco, Criss** **Sage Sangiacomo, City Manager** **Cedric Crook, Police Chief**	**Sage Sangiacomo,** City Manager; 463-6221 ssangiacomo@cityofukiah.com
REGIONAL	**MTG DATE/TIME**	**LOCATION**	**MAILING ADDRESS/CONTACT**	**COMMITTEE FUNCTION**	**ASSIGNED TO**	**PRINCIPAL STAFF SUPPORT**
Great Redwood Trail Agency (GRTA)	Bi-monthly, 3rd Thursdays, 10:30 a.m.	Various Locations - announced	419 Talmage Road, Suite M Ukiah, CA 95482 463-3280	Provides a unified and revitalized rail infrastructure meeting the freight and passenger needs of the region	**Rodin** **Sher- Alternate**	**Neil Davis,** Community Services Director 467-5764 ndavis@cityofukiah.com
League of California Cities Redwood Empire Legislative Committee	Prior to Division Meetings, meets 3x in person and then via conference call	Various locations that are announced	Redwood Empire League President; Public Affairs Program Manager (916) 658-8243	Elected city officials and professional city staff attend division meetings throughout the year to share what they are doing and advocate for their interests in Sacramento	**Orozco** **Criss - Alternate**	**Sage Sangiacomo,** City Manager; 463-6221 ssangiacomo@cityofukiah.com
Russian River Watershed Association (RRWA)	4th Thursday of month, 9:00 a.m. (only 5 times a year)	Windsor Town Hall 9291 Old Redwood Hwy, #400 Windsor, CA 95492 707-838-1000	Russian River Watershed Association 2235 Mercury Way, Suite 105 Santa Rose, CA 95407 info@rrwatershed.org 707-508-3670 (message only)	Consider issues related to Russian river - plans projects and funding requests	**Rodin** **Sher - Alternate**	**Tim Eriksen,** Public Works Director/City Engineer; 463-6280 teriksen@cityofukiah.com
Northern California Power Agency (NCPA) - Commission	4th Thursday of month, 9:00 a.m. *(see NCPA calendar)*	Roseville, CA and other locations	651 Commerce Drive Roseville, CA 95678 916-781-4202	Pool of State and local power utilities developing and operating power generation, providing scheduling and related energy services and providing regulatory and legislative support.	**Crane - Commissioner** **Sher - City Council Alternate** **Sauers - Alternate and Commissioner in absence of Commissioner Crane**	**Cindi Sauers -** Electric Utility Director; 463-6286 csauers@cityofukiah.com
Northern California Power Agency (NCPA) – Lodi Energy Center (LEC) Appointment	2nd Monday of month, 10:00 AM	Lodi, CA and other locations	651 Commerce Drive Roseville, CA 95678 916-781-4299	Committee oversees the operation, maintenance and expenditures of the LEC 300 MW generating project.	**Sauers** – Project Participate Appointee	**Cindy Sauers,** Electric Utility Director, 463-6286, csauers@cityofukiah.com
Transmission Agency of Northern California (TANC)	4th Wednesday of month, 10 a.m.	35 Iron Point Circle Suite 225 Folsom, CA	35 Iron Point Cir #225 Folsom, CA 95630 916-852-1673; info@tanc.us	Provide electric transmission to its Member utilities through transmission line ownership or contract arrangements.	**Crane** **Sauers - Alternate**	**Cindi Sauers -** Electric Utility Director; 463-6286 csauers@cityofukiah.com C
STANDING COMMITTEES	**MTG DATE/TIME**	**LOCATION**	**MAILING ADDRESS/CONTACT**	**COMMITTEE FUNCTION**	**ASSIGNED TO**	**PRINCIPAL STAFF SUPPORT**
Diversity and Equity	TBD	Virtual Meeting Room (link to be created)	Civic Center 300 Seminary Ave. Ukiah, CA 95482	Improve diversity and equity in the City's workforce and municipal services	**Orozco/Criss**	**Traci Boyl,** City Manager's Office Management Analyst; 467-5720; tboyl@cityofukiah.com
Fire Executive Committee	2nd Tue, every other month beginning in January; 5:00 p.m.	Ukiah Valley Conference Center, 200 S. School Street Ukiah, CA	Civic Center 300 Seminary Ave. Ukiah, CA 95482 sabba@cityofukiah.com	Per the recently adopted agreement between the City of Ukiah and the Ukiah Valley Fire Protection District	**Orozco/Sher** **Alternates: Criss**	**Doug Hutchison,** Fire Chief; 463-6263; dhutchison@cityofukiah.com
Countywide Oversight Board to the RDA Successor Agencies	4th Thursday of January, 4:00 p.m.; meets annually	Ukiah Valley Conference Center, 200 S. School Street Ukiah, CA	City of Ukiah ATTN: City Clerk 300 Seminary Ave. Ukiah, CA 95482	Oversee and direct the Successor Agencies of the former redevelopment agencies	**Crane**	**Dan Buffalo**, Director of Finance; 463-6220 dbuffalo@cityofukiah.com **Kristine Lawler**, City Clerk; 463-6217, klawler@cityofukiah.com
Water Executive Committee (Ukiah Valley Water Authority)	1st Tue of each month at 6:00 p.m.	Ukiah Valley Conference Center, 200 S. School Street Ukiah, CA	City of Ukiah ATTN: Sean White 300 Seminary Ave. Ukiah, CA 95482	Oversight of UVWA; set annual budget for the combined water system; Manage rates and collect levies; modify existing water rights for the provision of water service; mediation and dispute resolution;	**Crane/Orozco**	**Sean White,** Director of Water Resources; 463-5712 swhite@cityofukiah.com

2025 AD HOC COMMITTEES		
COMMITTEE	**ASSIGNED TO**	**PRINCIPAL STAFF SUPPORT**
Electric Grid Operational Improvements	**Crane/Orozco**	**Cindy Sauers, Electric Utility Director**; 463-6286 csauers@cityofukiah.com
Trench Cut Policy Development	**Crane**	**Tim Eriksen, Public Works Director/City Engineer**; 463-6280 teriksen@cityofukiah.com
Advance Planning & Policy for Annexation Applications	**Crane/Rodin**	**Craig Schlatter, Community Development Director** 463-6219 cschlatter@cityofukiah.com
UVSD/ City Relations *Ad hoc committee to address specific issues with the Ukiah Valley Sanitation District, including discussion of overall sewer system service delivery policies, operating policy revisions, potential revisions to the current Operating Agreement, and cost sharing*	**Crane/Orozco**	**Dan Buffalo, Director of Finance;** 463-6220 dbuffalo@cityofukiah.com **Sean White, Water Resources Director** 463-5712 swhite@cityofukiah.com
Orr Street Bridge Corridor	**Rodin/Sher**	**Tim Eriksen, Public Works Director/City Engineer**; 463-6280 teriksen@cityofukiah.com
Complete Streets	**Rodin/Crane**	**Tim Eriksen, Public Works Director/City Engineer**; 463-6280 teriksen@cityofukiah.com **Shannon Riley, Deputy City Manager** 467-5793 sriley@cityofukiah.com **Neil Davis, Community Services Director** 467-5764 ndavis@cityofukiah.com
Special Districts (Water District Consolidation)	**Orozco/Crane**	**Shannon Riley, Deputy City Manager** 467-5793 sriley@cityofukiah.com
Corp Yard Planning	**Crane/Orozco**	**Jason Benson, Senior Civil Engineer** 463-6284 jbenson@cityofukiah.com
Mendocino County Courthouse Project and Reuse	**Sher/Orozco**	**Shannon Riley, Deputy City Manager** 467-5793 sriley@cityofukiah.com
City's 150-Year Anniversary Planning	**Orozco/Rodin**	**Shannon Riley, Deputy City Manager** 467-5793 sriley@cityofukiah.com
Zoning Reform *Function is to explore creation of a new ministerial zoning permit and identify additional zoning streamlining and reform efforts to provide better and more consistent development outcomes*	**Crane/Orozco**	**Craig Schlatter, Community Development Director** 463-6219 cschlatter@cityofukiah.com
Community Health Needs Assessment (CHNA) Steering Committee *assist in the creation of the 2025 CHNA Report for the communities served by the three Adventist Health hospitals in Mendocino County. providing insight, identifying, gathering and analyzing the health needs of our community. Additionally*	**Rodin/Sher**	**Jeremy Malin, NP** Director of Community Health Analytics Adventist Health Howard Memorial Adventist Health Ukiah Valley Adventist Health Mendocino Coast 978-289-3330; malinjr@ah.org
Parks & Recreation Special District Exploration	**Rodin/Orozco**	**Neil Davis, Community Services Director** 467-5764 ndavis@cityofukiah.com
Downtown Zoning code	**Crane/Rodin**	**Craig Schlatter, Community Development Director** 463-6219 cschlatter@cityofukiah.com
Tourism Advisory Committee	**Rodin/Sher**	**Shannon Riley, Deputy City Manager** 467-5793 sriley@cityofukiah.com
Historic Preservation Code	**Sher/Criss**	**Craig Schlatter, Community Development Director** 463-6219 cschlatter@cityofukiah.com
Fire Severity	**Rodin/Orozco**	**Craig Schlatter, Community Development Director** 463-6219 cschlatter@cityofukiah.com
CalPERS	**Crane/Orozco**	**Dan Buffalo, Director of Finance;** 463-6220 dbuffalo@cityofukiah.com
City Council Handbook Review and Update	**Sher**	**Kristine Lawler, City Clerk** 463-6217; klawler@cityofukiah.com

*Note: Changing the composition of an existing ad-hoc among current councilmembers after work has begun presents potential Brown Act issues. Requests for fully filled ad-hocs are represented on the draft, but staff does not recommend changes except to fill vacated assignments. The current requests on the sheet for fully composed ad-hocs are primarily intended to convey interest in topics covered by these ad-hoc committees for possible future consideration of new assignments.